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Report of the Commission of Inquiry on Aviation Safety

Volume 2

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**REPORT OF THE
COMMISSION OF INQUIRY
ON AVIATION SAFETY**

VOLUME 2



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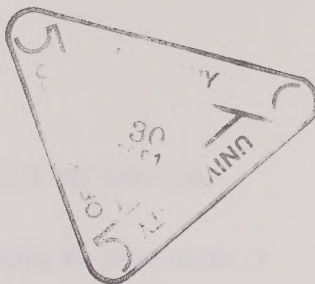
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**REPORT OF THE
COMMISSION OF INQUIRY
ON AVIATION SAFETY**

**Commissioner
The Honourable Mr. Justice Charles L. Dubin**

October 1981

VOLUME 2



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PREFACE

TO: The Honourable Jean-Luc Pepin
Minister of Transport

Dear Mr. Minister:

I am pleased to submit herewith Volume 2 of my Report.

In Volume 1, I stated that as I interpret my mandate, I am to inquire into current aviation safety legislation, to consider its adequacy, to ascertain how the Canadian Air Transportation Administration is enforcing the present laws and carrying out its responsibilities, and to make recommendations where I consider it appropriate as to what legislative and procedural changes should be made to improve Canada's aviation safety record, and to forestall any diminution of aviation safety in the future.

At the same time, I advised you that I had concluded that the Inquiry could be conveniently divided into several subject matters and that the headings which I chose were the following:

1. Airworthiness
2. Accident and Incident Investigation and Reporting
3. Enforcement
4. Navigational Aids
5. Uncontrolled Airports
6. Personnel

In Volume 1, amongst other matters, there were included my conclusions and recommendations on the subject matter of Accident and Incident Investigation and Reporting as well as on the relationship of accident investigators and provincial coroners when inquiring into a fatal aircraft accident.

In this Volume, I set forth my conclusions and recommendations on the subject matters of Enforcement, Airworthiness, and Departmental Aircraft. I have devoted a special Chapter to the subject matter of Departmental Aircraft, which formed part of the Inquiry into the broader subject of Airworthiness.

I have yet to deal with the subject matters of Navigational Aids, Uncontrolled Airports and Personnel, which will be included in my final Volume which I am endeavouring to complete as expeditiously as I can. There will be included in that Volume some other conclusions and recommendations which also relate to Enforcement and Airworthiness, since many of the subject matters are by their very nature interlocking.

Schedule "A" lists all those who participated in the subject matters reported on in this Volume. The response was really quite overwhelming, and I regret that it was just impossible for me to make note of the contribution of each of the participants. However, I am indebted to each of them and have endeavoured to give careful consideration to all of that which was put before me.

I appreciate the support that you have given to the recommendations which I made in Volume 1 of my Report and the high priority that you have assigned to aviation safety.

All of which is respectfully submitted.

A handwritten signature in dark ink, appearing to read "Charles L. Dubin", written over a horizontal line.

Charles L. Dubin

July 24, 1981

CHAPTER I

ENFORCEMENT

INTRODUCTION

The role of government in the regulation of air safety standards has been generally accepted for many years. There are some who still argue that those who operate commercial air carriers should be self-regulated, and that the responsibility for deciding and enforcing safety standards should be left to the individual airlines or to the airlines collectively. The theory of those who espouse this point of view is that in the end competitive forces will prevail, and the unsafe carrier will lose its customers and give way to the safe operator.

This point of view was referred to in a brief submitted to the Commission by the Ontario Ministry of Transportation and Communications in the following manner:

"The purpose of any government regulation is to guard against actions which are potentially detrimental to society. Enforcement of the regulations becomes necessary when the regulations are not being adhered to and society suffers as a result. Highway speeds are regulated, for example, to minimize the frequency and seriousness of automobile accidents, among other things. There would be no need to enforce the regulation if, in this case, it could be proven that in practice speed was not a contributing factor in highway accidents. The existence of enforcement officers on highways, i.e. policemen, testifies to the fact that government has judged the extent of damage resulting from the violation of the regulation to be unacceptable.

In the case of aviation, it has been a commonly held belief within the industry that the industry should be allowed to regulate itself. Further, it has always been suggested that the safety record of aviation has compared favorably with other transport modes. Government has not, therefore, found it necessary to protect society with an extensive organization of aviation enforcement officers. The stress has been on the preparation of regulations rather than the enforcement of them. A 1977 survey by Transport Canada presented, however, little evidence to suggest that the aviation industry warrants less enforcement of regulations than do other sectors of society." (The 1977 survey referred to in the brief was the Northern Ontario Aviation Safety Study Report.)

In the Report of the Committee of Inquiry into Civil Air Transport headed by Professor Sir Ronald Edwards, delivered in May of 1969, which committee inquired into the economic and financial situation and prospects of the British Civil Air Transport Industry amongst other matters, the proposition that the responsibility for safety for commercial air carriers should be left with the industry was dealt with as follows:

"... At the outset, however, we shall say very briefly that the complete devolution of responsibility for deciding and enforcing safety standards onto the individual airlines or to the airlines collectively would not be acceptable.

The view is very widely held that market forces alone could not be expected to elicit from all airlines at all times a sufficiently high and consistent degree of attention to air safety standards. It is true that in the long run a good accident record would serve an airline well commercially, but it would be unthinkable to most people that government should abandon the principle of prevention based on regulation and certification and wait for an airline to disqualify itself through its accident record from the confidence of its customers."

There were also those who urged that privately owned aircraft should be free of stringent regulations. They argued that private owners are in a better position than the regulator to determine the continued airworthiness of their aircraft and of their ability to navigate safely. However, it is apparent from the accident statistics set forth in Volume 1 of this Report that privately owned aircraft also must be subject to regulation. As is pointed out in that Volume, private aviation accounts for approximately 50% of civil aircraft accidents although only engaged in approximately 25% of the total flying activity in Canada. There is also obviously the risk of harm not only to the owner and his passengers but also to others using the airways and to the public in the event of a privately owned aircraft failing to observe the safety standards.

In a Special Review of The Safety Performance of United Kingdom Airline Operators in 1968, the following conclusion as to the responsibility of government was stated as follows:

"In general it can be said that it is the duty of the State to regulate air navigation and it is the responsibility of the operator and the aircraft commander to comply with the statutory requirements and to ensure good operating practice and thereby flight safety. The State, however, has an over-riding responsibility to see that the operator discharges his responsibilities adequately."

It is, therefore, clear, I think, that government has the duty to enact safety regulations with a view to promoting aviation safety, and it follows that it is the responsibility of government to see that such safety standards are complied with.

As I have noted earlier, the purpose of enforcement of safety standards is to seek compliance. In a recent study undertaken by the National Academy of Sciences in the United States into airworthiness certification referred to in Volume I of this Report, the problem of how best to achieve compliance was posed as follows:

"...How to establish a reliable system of scientific and technological vigilance that polices without a garrison, that establishes technical standards while respecting creativity, innovations, and competition, that protects human life and the environment at costs that do not bar public enjoyment of the benefits is the challenge to FAA as it is to several other regulatory agencies."

Although the above quotation was stated in the context of enforcing airworthiness standards, it is equally applicable to the enforcement of all civil aviation safety standards.

The Commission inquired into the adequacy of the legislation designed to ensure flight safety, the organization of the Air Administration which has the responsibility for the enforcement of the safety standards, and the policy and procedures in place.

At the public hearings of the Commission held in Vancouver, British Columbia; Sioux Lookout, Ontario; Sandy Lake, Ontario; Big Trout Lake, Ontario; Thunder Bay, Ontario; Quebec City, Quebec; and Halifax, Nova Scotia, evidence and briefs were submitted to the Commission relating to all aspects of enforcement.

All those who participated made a great contribution to the work of the Commission. Their response was so overwhelming that it would be quite impossible to make note of all that was put before me.

Enforcement should play a very significant role in an aviation safety system and in an accident prevention program. It is presently not doing so, and serious concern was expressed uniformly across the country as to the inadequacy of the current enforcement process. The reason that is so will become apparent from what follows in this Chapter. As will appear, the legislation is inadequate, the organization of the Air Administration does not give sufficient priority to enforcement, and the policy and procedures now in effect discourage an adequate enforcement response to the violations discovered. The latter is reflected in a brief submitted to the Commission by the Chief of Maintenance of the RCMP Air Division where he stated:

"In many DOT regions, enforcement of Air Regulations, Air Navigation Orders and standards of airworthiness, occupies a back row and the unwritten policy seems to be 'Let's not rock the boat'."

PART I

CURRENT ENFORCEMENT LEGISLATION

THE ENABLING STATUTE

Section 3 of the Aeronautics Act, R.S., c. 2, provides in part as follows:

"It is the duty of the Minister

- (a) to supervise all matters connected with aeronautics;
- (l) to consider, draft and prepare for approval by the Governor in Council such regulations as may be considered necessary for the control or operation of aeronautics in Canada, including the territorial sea of Canada and all waters on the landward side thereof, and for the control or operation of aircraft registered in Canada wherever such aircraft may be;"

Section 6 of the said statute further provides as follows:

"(1) Subject to the approval of the Governor in Council, the Minister may make regulations to control and regulate air navigation over Canada, including the territorial sea of Canada and all waters on the landward side thereof, and the conditions under which aircraft registered in Canada may be operated over the high seas or any territory not within Canada, and, without restricting the generality of the foregoing, may make regulations with respect to

- (a) the licensing of pilots and other persons engaged in the navigation of aircraft, and the suspension and revocation of such licences;
- (b) the registration, identification, inspection, certification and licensing of all aircraft;
- (c) the licensing, inspection and regulation of all aerodromes and air-stations;
- (d) the conditions under which aircraft may be used or operated;
- (e) the conditions under which goods, mails and passengers may be transported in aircraft and under which any act may be performed in or from aircraft or under which aircraft may be employed;

- (f) the prohibition of navigation of aircraft over such areas as may be prescribed, either at all times or at such times or on such occasions only as may be specified in the regulation, and either absolutely or subject to such exceptions or conditions as may be so specified;
 - (g) the areas within which aircraft coming from any places outside Canada are to land, and the conditions to be complied with by any such aircraft;
 - (h) aerial routes, their use and control;
 - (i) the institution and enforcement of such laws, rules and regulations as may be deemed necessary for the safe and proper navigation of aircraft in Canada, including the territorial sea of Canada and all waters on the landward side thereof, and of aircraft registered in Canada wherever such aircraft may be;
 - (j) the height, use and location of buildings, structures and objects, including objects of natural growth, situated on lands adjacent to or in the vicinity of airports, for purposes relating to navigation of aircraft and use and operation of airports, and including, for such purposes, regulations restricting, regulating or prohibiting the doing of anything or the suffering of anything to be done on any such lands, or the construction or use of any such building, structure or object;
 - (k) the maximum hours of work and other working conditions for pilots, co-pilots, navigators and flight engineers employed by any person operating a commercial air service licensed by the Canadian Transport Commission;
 - (l) the entering of the premises of any aircraft manufacturer and the inspecting of those premises, including any equipment, stock or records found therein for the purpose of determining the airworthiness of aircraft manufactured by that manufacturer;
- (2) Any regulation made under subsection (1) may authorize the Minister to make orders or directions with respect to such matters coming within this section as the regulations may prescribe.
- (3) The Minister may authorize the Deputy Minister of Transport to make orders or directions referred to in subsection (2) with respect to the matters referred to in paragraph (1) (f)."

REGULATIONS

The laws and rules deemed necessary for the safe and proper navigation of aircraft in Canada and for the enforcement of them are found principally in the Regulations. The principal Regulations relevant to enforcement are as follows:

"104. The Minister may make orders or directions prescribing standards for the supervision and control of aeronautics and conditions under which aircraft registered pursuant to these Regulations may be operated and, without restricting the generality of the foregoing, may make orders or directions prescribing standards and conditions

- (a) for the registration and identification of aircraft;
- (b) for the certification and inspection of aircraft;
- (c) for the physical and associated characteristics of, and the equipment used at, aerodromes;
- (d) for the licensing of flight crews, air traffic control officers and aircraft maintenance personnel;
- (e) governing the conduct of visual and instrument flights;
- (f) for the establishment and operation of air traffic control, flight information and alerting services;
- (g) that will ensure in similar operations throughout the world a level of safety above a prescribed minimum;
- (h) that will ensure uniformity in the notification, investigation and reporting of aircraft accidents;
- (i) for the dissemination of meteorological information for aircraft operations;
- (j) for a dimensional system for all air navigation and air traffic control purposes;
- (k) for the standardization of communications equipment and systems and of communications procedures used in air navigation; and
- (l) for the collection, publication and dissemination of aeronautical information required for air navigation and aircraft operations.

211. (1) The Minister may establish standards of airworthiness for aircraft, including requirements in respect of the design, construction, weight, instruments and equipment of the aircraft and any other matter relating to the safety of such aircraft.

(2) The Minister, upon being satisfied that an aircraft conforms to the standards of airworthiness established in respect of that aircraft, may issue a certificate to be known as a certificate of airworthiness, in a form prescribed by the Minister.

(3) The Minister may designate any aircraft as an ultra-light aircraft where, by reason of its low weight or wing loading and its particular design, it is not practicable to prescribe standards of airworthiness for it.

(4) The Minister may, in respect of an ultra-light aircraft or a private aircraft issue a flight permit in a form prescribed by him and may make directions concerning equipment, weight, instruments and any other matters relating to the operation of such aircraft.

(5) Where an aircraft is to be operated for purposes of experiment, test, demonstration or other special flight, the Minister may issue a flight permit in respect of that aircraft in a form prescribed by him.

(6) A certificate of airworthiness or flight permit issued under this Part shall contain such conditions relating to the equipment, maintenance and operation of the aircraft as may be prescribed by the Minister, and the conditions so prescribed may be amended at any time by the Minister.

(7) The Minister may at any time inspect or cause to be inspected any aircraft in Canada, or any aircraft in respect of which a certificate of airworthiness or flight permit has been issued under this Part.

(8) The Minister may establish standards for the inspection, maintenance, modification, repair and overhaul of any aircraft including requirements in respect of the instruments and equipment and any other matter relating to the safety of such aircraft.

(9) The Minister may prescribe procedures for the determination of the airworthiness of aircraft and aircraft instruments and, for such purpose, may prescribe

- (a) the frequency of inspections;
- (b) the responsibilities of inspection, maintenance and other personnel;
- (c) the methods of servicing, maintenance, overhaul, repair and modification of aircraft;
- (d) the design, construction and airworthiness certification of aircraft; and
- (e) such other matters regarding airworthiness as the Minister deems necessary.

(10) The Minister may cause an Engineering and Inspection Manual to be published and maintained in which the procedures and other matters prescribed pursuant to subsection (9) are set out.

700. No person shall operate a commercial air service in Canada unless he holds a valid and subsisting certificate issued by the Minister certifying that the holder thereof is adequately equipped and able to conduct a safe operation as an air carrier."

SUBORDINATE LEGISLATION

In addition to the Regulations, the Minister of Transport has caused to be published a number of supplementary documents. These documents also provide data and prescribed standards of procedure and performance and are to be found in the following:

- (a) The Air Navigation Orders.
- (b) The Engineering and Inspection Manual, which prescribes procedures for the determination of airworthiness of aircraft and aircraft parts, is enabled by subsection 211(10) of the Air Regulations.
- (c) The Canada Air Pilot, which provides essential data relating to airport and approach facilities and prescribes weather minima for Instrument Flight Rule approaches, is enabled by subsection 554(1).
- (d) The Designated Airspace Handbook, which prescribes and delineates for air navigation purposes the horizontal and vertical limits of all controlled airspace and all flight information Regions, is enabled by subsection 503(1) of the Air Regulations.
- (e) The Flight Planning and Procedures - Canada and North Atlantic document, which prescribes procedures and requirements for the operation of aircraft in specified areas, is enabled by subsection 500.1(2).
- (f) The Standards Obstruction Markings Manual, which sets out standards for the marking and lighting of buildings, structures and objects that constitute hazards to air navigation, is enabled by subsection 514.1(2).
- (g) The Manual of All Weather Operations (Category II), which specifies the criteria for Category II IFR operations of aircraft, is enabled by section 555.3.

PUNITIVE PROVISIONS

In enforcing the laws, rules and regulations deemed necessary for the safe and proper navigation of aircraft in Canada, the Minister may resort to administrative sanctions or to the judicial process.

ADMINISTRATIVE SANCTIONS

The principal administrative sanctions to which the Minister may resort for enforcement purposes are to be found in the following Air Regulations:

"212. The Minister may, if he has reason to believe that an aircraft is unsafe for flying, suspend the certificate of airworthiness or flight permit issued in respect of that aircraft.

213. The Minister may cancel or suspend a certificate of airworthiness or a flight permit where

- (a) he is of the opinion that cancellation or suspension is advisable having regard to the safety of aerial navigation;
- (b) the certificate or permit has been mutilated, altered or rendered illegible; or
- (c) the aircraft in respect of which the certificate or permit was issued has been destroyed or withdrawn from use.

304. The Minister may cancel or suspend an airport licence at any time for any reason that to him seems sufficient.

407. The Minister may cancel or suspend a licence, permit, certificate or other document of authorization issued to any person under this Part where the Minister

- (a) on reasonable grounds, believes that such person has violated any provision of these Regulations or any order or direction made pursuant to these Regulations; or
- (b) is of the opinion that such person is incompetent or physically unfit to exercise the rights and privileges thereunder.

704. The Minister may cancel or suspend an operating certificate where

- (a) the holder of the operating certificate has failed to conduct the commercial air service in a safe and proper manner or to maintain adequately the equipment required in connection therewith;
- (b) the operation in respect of which the operating certificate was issued is discontinued; or
- (c) the Minister, on reasonable grounds, believes the holder of the operating certificate has contravened
 - (i) any operations specifications,
 - (ii) any provision of these Regulations, or
 - (iii) any order or direction made pursuant to these Regulations.

813. Where the Minister has reason to believe, upon complaint or otherwise, that an aircraft within Canada is intended or is about to proceed upon a flight in contravention of these Regulations or while in a condition unfit for flight, he may make such directions and take such action by way of the provisional detention of the aircraft or otherwise as he deems necessary, for the purpose of causing the circumstances relating to the flight to be investigated, or the aircraft to be detained until such time as he is satisfied that the Regulations are being complied with or until such alterations or repairs as he deems necessary to render the aircraft fit for flying have been made."

JUDICIAL SANCTIONS

Aeronautics Act //

"6. (4) Every person who violates a regulation is guilty of an offence and is liable on summary conviction to a fine not exceeding five thousand dollars, or to imprisonment for a term not exceeding one year or to both.

(5) Every person who violates an order or direction of the Minister made under a regulation, or who obstructs or hinders an investigation carried on under this Act or the regulations, is guilty of an offence and is liable on summary conviction to a fine not exceeding one thousand dollars or to imprisonment for a term not exceeding six months or to both."

Section 5 of the Aeronautics Act, as amended, empowers the Governor in Council to make regulations regarding security measures on board aircraft and at aerodromes. Section 5.1(11) provides:

"Every person who violates subsection (1.1), (3), (4) or (5) or any regulation made under this section is guilty of an offence and is liable on summary conviction to a fine not exceeding five thousand dollars or to imprisonment for a term not exceeding one year or to both."

THE CRIMINAL CODE

Section 203 provides:

"Every one who by criminal negligence causes death to another person is guilty of an indictable offence and is liable to imprisonment for life."

Section 204 provides:

"Every one who by criminal negligence causes bodily harm to another person is guilty of an indictable offence and is liable to imprisonment for ten years."

COMMENT

The laws and rules deemed necessary for the safe and proper navigation of aircraft in Canada are not to be found in the Aeronautics Act which is the enabling statute. They are found in the Air Regulations, the Air Navigation Orders, NOTAMS, the Engineering and Inspection Manual, the Designated Airspace Handbook and in a myriad of other instruments and documents. They are all purportedly promulgated under the authority granted to the Minister by section 6(1) of the Aeronautics Act to enact regulations with the approval of the Governor in Council, and his authority pursuant to section 6(2) to make orders or directions with respect to such matters coming within that section.

However, it is a fundamental principle of law that only such safety rules as are specifically empowered by an enabling statute are valid and enforceable. This is particularly so when sanctions are attached for a breach of such rules. There is a serious question whether all the safety rules promulgated in the various instruments and documents to which I have referred have been enabled by the Aeronautics Act.

Apart from the question of the validity of some of the rules prescribed for the safe and proper navigation of aircraft in Canada, the structure of the legislation is awkward and complex. It is so structured as to impede rather than aid enforcement. It is very difficult to find the applicable rules and standards which are expected to be complied with. When located, the authority of the legislation is questionable. Most of the witnesses who testified in this phase of the Inquiry described the legislation as poorly drafted, and as one witness stated often contains "loopholes larger than aircraft". Doubts about the enforceability of the rules have had the effect of making enforcement personnel extremely timorous for fear that the action will be tested in the courts. Many prosecutions have failed because of the ambiguity of the legislation.

The rapid growth of aviation in Canada and the advances in technology have rendered it extremely difficult for those responsible for the enactment of safety rules to keep pace

with the many changes necessary. As a result, the Air Administration had been compelled to approach the resolution of the difficulties by a band aid process.

In 1975 a Management Review of the Enforcement Section was undertaken. Included amongst its recommendations for change was the following:

"13. An indepth revision of the Air Regulations be undertaken. The enforcement Sub-section to have input to this revision."

In one of the briefs submitted by the Air Administration to the Commission on this phase of the Inquiry, the following observations are made:

". . .

The periodic amendment of the Aeronautics Act has not been an easily accomplished undertaking and it has been 10 years since Part I was amended. It appears to be a question of priority and the last four Ministers have not been able to obtain the necessary support with the result that a number of amendments to the Air Regulations have also been delayed because the enabling clause in the Act is non-existent. This in turn has had a major influence on the enforcement system, although other difficulties prevail.

In fact, there are current legal opinions that many procedures of inspection, certification, approvals, delegation and enforcement are not enabled by the Act but have been conducted as administrative actions for decades and appear to have gone unchallenged until very recently. Although as previously indicated it has not been possible to have the Act amended in recent years to correct these deficiencies, there have been numerous attempts which saw the draft amendments proceed to the Parliamentary Standing Committee for Transportation and Communications during the second reading and on each occasion the industry reacted to the proposed changes and opposed them.

The opposition was based upon the concern about giving more power to the Minister and hence to DOT personnel as sub-delegation, even though it was pointed out that the staff has been illegally using such authority for many years, and even for decades.

Further, in recent years the inconsistency of judgements in the courts has resulted in differences between regions, and from year to year. In fact, the courts require more direction in the application of the Act. Thus, the result has been unequitable application of the Act and many have suffered as a consequence. This is of course reflected in the recent demands for appeal procedures against decisions affecting licencing, and individual rights.

". . .

Pressure was felt by the Canadian Air Transportation Administration during the 70's to undertake a complete review of the Act, Regulations, and other non-statutory instruments being widely used to direct and control civil aviation. This resulted in the creation of the Aeronautics Task Force in 1978 under the direction of R. Lafleur who assembled a team of lawyers and civil aviation specialists to study the Act."

Since 1978 the Aeronautics Task Force under the leadership of Mr. Robert S. Lafleur has delivered a series of Concept Papers, but on the basis of the material submitted to the Commission, the task force does not appear to have yet embarked upon the difficult assignment of preparing the actual revisions. Thus, although as early as 1975 many of the enforcement problems which the present state of the legislation creates were identified, and the need for revision stressed, the safety rules still remain in their same questionable state.

The task force, in addition to its own study, has now available to it all of that which was submitted to me in this phase of the Inquiry, which I think should be of assistance. I do not think that it would be in the public interest if I were to detail those provisions which I think are of doubtful legal validity. I am confident that the task force is aware of them.

It is apparent from what I have set forth above that a complete revision of the Aeronautics Act and the rules designed to govern the safe conduct of civil aircraft is urgently needed, and, in my opinion, the Aeronautics Task Force should now give a high priority to the preparation of the actual revisions.

I will be proposing certain changes to the legislation to meet the significant problems which this phase of the Inquiry has brought to light.

PART II

THE ENFORCEMENT ORGANIZATION - AN OVERVIEW

In Canada, many accidents, and incidents which could easily lead to accidents, occur by reason of the failure to obey the laws, rules and regulations which are deemed necessary for the safe and proper navigation of aircraft. Enforcement of such rules is designed to secure compliance, and an effective enforcement process is a necessary component of any aviation safety system. As is pointed out in Volume 1 of this Report, one out of every seven aircraft accidents results in fatalities.

Compliance can be obtained in many ways. An educational program is of great assistance to those who are conscious of safety and of their duty to obey the law. An active surveillance program can often prevent an accident or incident from occurring, and the very presence of enforcement officers in the field can promote aviation safety. A program for the detection of violations is also an essential step. Once a detection of a violation has been noted, it must be investigated in a professional manner if enforcement is to be meaningful. When a violation has been detected, it may be appropriate in some cases to seek future voluntary compliance by negotiation and conciliation. On the other hand, it is often apparent that punitive measures must be resorted to as a punishment and a deterrent to others. The Air Administration has the option of imposing an administrative sanction ranking from a letter of warning to a suspension or cancelling of a document of entitlement, or initiating a prosecution. The punitive measures resorted to must necessarily be dependent on the gravity of the offence.

The Minister's responsibility to enforce the safety rules is discharged through the Canadian Air Transportation Administration (CATA) and is carried out by it both in headquarters and in the regions.

In its brief to the Commission, CATA provided the following general outline of the enforcement organization:

"ORGANIZATION

The functional responsibility to enforce the Air Regulations and Air Navigation Orders flows from senior management through the Headquarters Aeronautical Licensing Division (LIC) to the enforcement section (LICR) and in the regions, through the Regional Controllers, Civil Aviation (RCCA), and Regional Superintendents, Air Regulations (RSAR) to the Regional enforcement sections. These Headquarters and Regional organizations are described hereunder relative to the enforcement function and are also depicted in Appendix 'A' the enforcement function organization chart.

Headquarters - Organization - Enforcement

The Licensing Division (LIC) of the Licensing and Inspection Branch (DLI) is responsible for the development of enforcement guidelines and procedures, exercises functional supervision of the regional enforcement activity and serves as the focal control point within Headquarters for the enforcement of the Air Regulations and Air Navigation Orders. The LIC Division enforcement section (LICR) is comprised of a superintendent and three Civil Aviation enforcement specialists.

Major Functions - LICR

1. To develop enforcement guidelines and procedures.
2. To develop enforcement training programs and direct training of Civil Aviation Inspectors and other key personnel to ensure consistent appreciation of the Air Regulations and Air Navigation Orders.
3. To provide procedural advice to regional enforcement specialists.
4. To exercise functional supervision of regional enforcement activities by auditing, and reviewing regional enforcement actions to ensure uniformity of application of procedures and policies, and to correct system faults.
5. To review, to the extent that resources permit, present and proposed legislation and recommend changes to improve their enforceability.
6. To liaise with foreign civil aviation officials, the Canadian Armed Forces, Department of Justice, Canadian Transportation Commission and the Royal Canadian Mounted Police to develop procedures to achieve effective deterrents and to coordinate enforcement related actions.
7. To compile enforcement statistics, monitor and analyse trends and prepare related reports as required.

Regional Organization - Enforcement

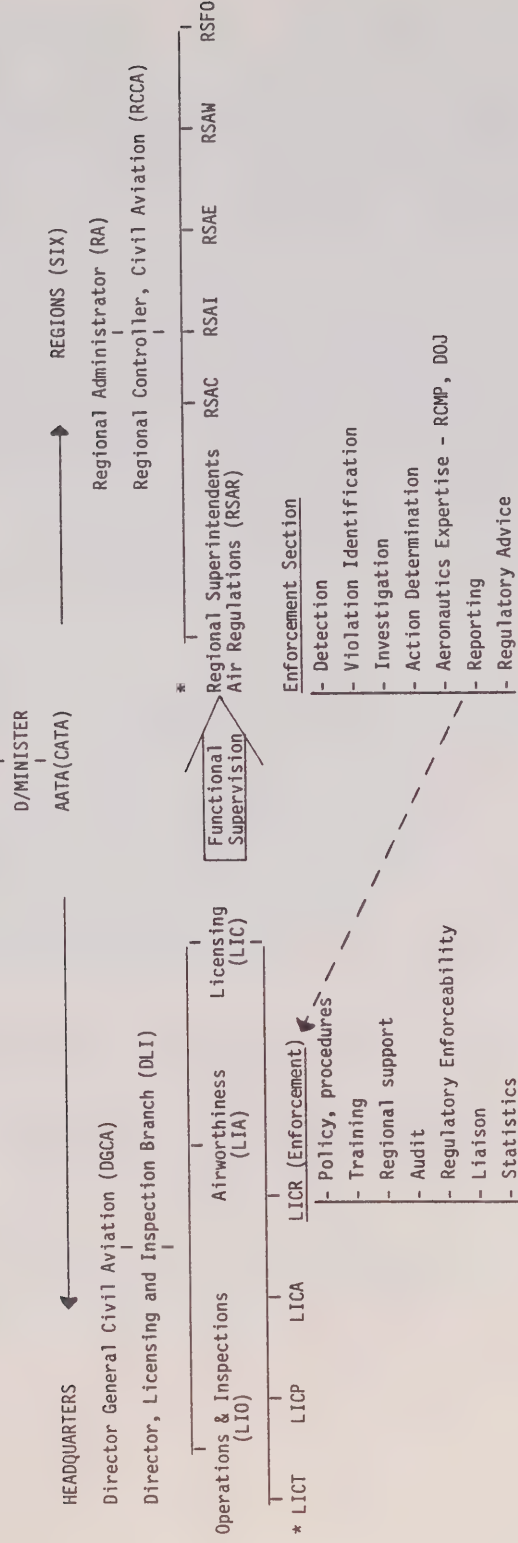
The six Regional Superintendents, Air Regulations (RSAR) are responsible to the Regional Controllers, Civil Aviation (RCCA) for the line function of the enforcement activity. The Air Regulations Division is a regional counterpart of the Headquarters Licensing Division (LIC). Other Regional Divisions responsible to the RCCA engage in surveillance and report violations to the RSAR enforcement section.

The number of full time enforcement specialists in the Regional enforcement sections varies. There are two Specialists in the Pacific, Central, Ontario and Quebec Regions and one specialist in the Western and Atlantic Regions. Appendix C indicates the geographical disposition of the 10 regional enforcement specialists within Canada where our aviation community now numbers over 90,000 licensed personnel involved in the operation of over 18,000 aircraft. The major functions of the regional enforcement specialists noted hereunder are reflected in the description of the enforcement process.

Major Functions - Regional Enforcement Specialists

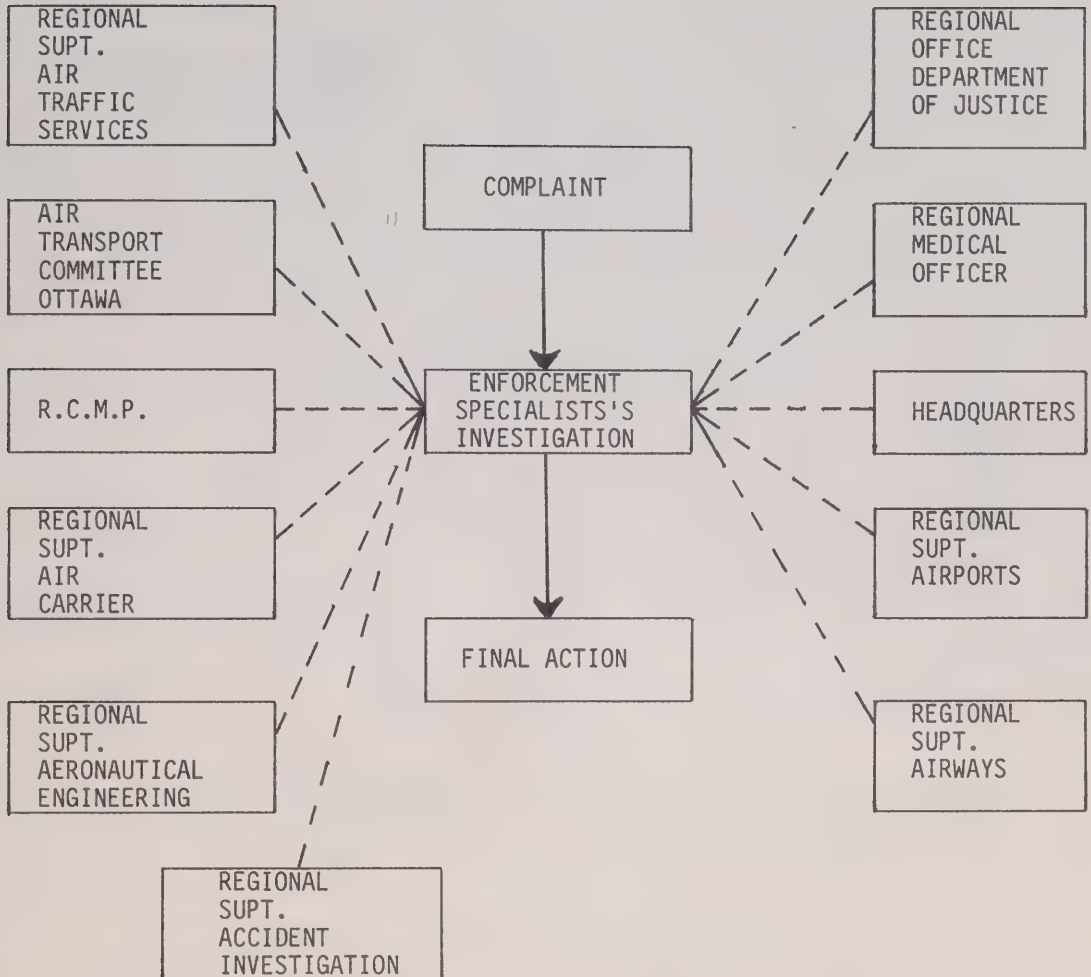
1. Surveillance - participates in surveillance for the purpose of detecting violations.
2. Analysis - reviews reported violations and assesses evidence.
3. Investigation - conducts additional investigation as necessary to acquire sufficient evidence.
4. Decision-making - determines or recommends to the RSAR, a course of action to be taken, i.e. administrative action, judicial action or no further action. Terminating a case with no further action is usually due to lack of evidence, the existence of mitigating factors, etc.
5. Assistance - provides assistance in RCMP investigations and to the Department of Justice Crown Prosecutor, and may also act as an expert witness in court.
6. Reporting - reports all enforcement actions concluded to Headquarters.
7. Information - provides regulatory information, as requested, to the public, the aviation community, industry, other law enforcement agencies and colleagues within CATA."

MINISTER OF TRANSPORT



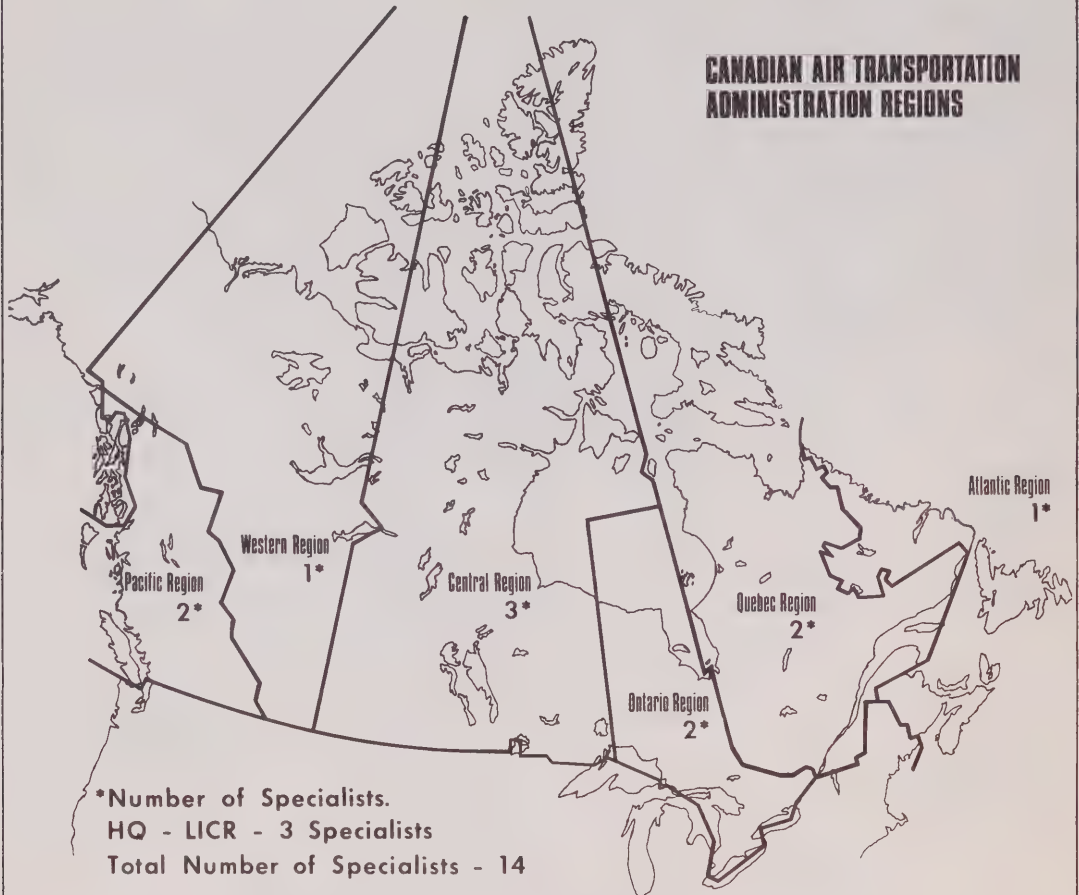
- * LICT - Training & Examination
LIPC - Personnel Licensing
LICA - Aircraft Licensing
- * RSAC - Regional Superintendent, Air Carrier Operations
RSAI - Regional Superintendent, Accident Investigation
RSAE - Regional Superintendent, Aeronautical Engineering
RSAM - Regional Superintendent, Airways
RSFO - Regional Superintendent, Flight Operations

ORGANIZATION - Investigation by Enforcement Specialist



APPENDIX C

CATA REGIONAL ENFORCEMENT SPECIALISTS, 1979



CIVIL AVIATION LICENSING STATISTICS, as of October 1 of each year

Certificates of Airworthiness and Flight Permits

1977	1978	1979
17031	17343	18120

Domestic Air Carriers

1977	1978	1979
716	817	863

Licence and Permit Holders

1978	1979
83529	90179

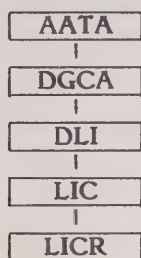
Operating Certificates

1977	1978	1979
1091	1252	1417

It is apparent from the very organization of the Canadian Air Transportation Administration that enforcement has been given a low priority. CATA employs approximately 13,000 persons, and yet out of the 13,000 there are presently only 15 enforcement specialists, of whom 4 are at headquarters and 11 in the regions.

At headquarters, enforcement is a subsection only of the Licensing and Inspection Branch presided over by the Director of Licensing and Inspection (DLI). This branch at the time of the hearings was in turn subdivided into divisions including Operations and Inspections, Airworthiness, and Aeronautical Licensing. Aeronautical Licensing is further subdivided into the following subsections: Training & Examination; Personnel Licensing; Aircraft Licensing; and Enforcement. The Enforcement Subsection is headed by a Superintendent (LICR), which position is presently vacant. There are four enforcement specialists, one of whom is acting Superintendent.

The chain of command may be illustrated by the following chart:



In the regions there is a similar chain of command: the counterpart of the Administrator is the Regional Administrator; the counterpart of the Director General, Civil Aviation, is the Regional Controller of Civil Aviation (RCCA) who in turn supervises a number of divisions including the Air Carrier Division, the Airworthiness Division, and the Air Regulations Division. The Superintendent of Air Regulations (RSAR) is responsible for enforcement and it is to him that the regional enforcement specialists report. The 11 enforcement specialists in the six regions are located in Vancouver, Edmonton, Winnipeg, Toronto, Quebec City and Halifax.

They receive complaints from the public, police agencies, foreign agencies, such as the Federal Aviation Administration of the United States, and principally from other branches and divisions of the Canadian Air Transportation Administration. The principal source of detection is derived from the air traffic controllers who complain that hundreds of infraction reports are not dealt with. They also complain that they receive no feedback with respect to any action taken as a result of information supplied by them to the enforcement specialists.

Within the Air Administration enforcement is regarded as a specialty. There are a large number of civil aviation inspectors and airworthiness inspectors who, in the course of their work, also detect violations. In the theory of the enforcement process, the paucity of enforcement specialists is rationalized by contending that the civil aviation inspectors and the airworthiness inspectors are part of the enforcement process. These inspectors, however, do not report to a superior who has any enforcement function. The air carrier inspectors report to the Superintendent of Air Carriers while the airworthiness inspectors report to the Superintendent of Aeronautics Engineering. These officials prefer to work with the air carriers to try to obtain compliance and, therefore, many serious infractions never come to the attention of the Enforcement Section. The inspections are frequently limited to the examination of documents. The practice of the air carrier inspectors and the airworthiness inspectors is to give advance notice to those being investigated who, forewarned in this manner, have ample opportunity to cover up any deficiencies.

In those cases in which a violation is reported to the Enforcement Section by the civil aviation inspectors and the airworthiness inspectors, there is no more than a report of an occurrence. Inasmuch as these inspectors are not trained in enforcement, no attempt is usually made by them to investigate the violation in a manner which would aid the Enforcement Section, or to secure or preserve evidence which may be used against the offender. Accordingly, the Enforcement Section is obliged to investigate the matter ab initio.

It is to be noted that the major functions of the regional enforcement specialists are those of surveillance, analysis, investigation, decision-making, etcetera. Although headquarters is expected to provide guidelines and policy, surveillance and investigation

are the responsibility of the regions. In addition to the responsibility for surveillance, and investigation of the alleged violations, the enforcement specialists are called upon to analyse the evidence and to recommend what deterrent action, if any, should be taken. Their advice is forwarded to their superintendents in the regions who have a limited delegated authority to take action.

By reason of the paper work involved in receiving and processing routine complaints, the regional enforcement specialists are forced to spend approximately 75% of their time in an office, which is remote from the aviation community, and even then are able to process only a fraction of the complaints received by them. Consequently, there is little time for surveillance, and there is no enforcement presence in the aviation community. Furthermore, since the enforcement specialist is in most cases required to commence the investigation ab initio, considerable time will have elapsed between the receipt of a complaint and the opportunity to investigate, and in many cases necessary evidence to support deterrent action will have disappeared.

Many of the enforcement specialists appeared before me and I was impressed with their ability and dedication. They are convinced that many aircraft accidents result from the failure to observe the safety rules and that stricter enforcement is an important adjunct to accident prevention. They feel that because they do not receive clear guidelines from headquarters, that there is a lack of a clearly defined role for them. They complained that they did not receive adequate training in detection, investigation, surveillance, gathering of evidence and the preparation of the case against an alleged offender. They are unhappy and frustrated because in their view they are unable, for reasons beyond their control, to perform their tasks as they would like to and in a manner which they think necessary. This has also made it difficult to recruit, and retain, those with the necessary expertise as enforcement specialists.

A good example is that of Mr. Ned C. Carnie. He is a twenty-year veteran of the RCMP, highly intelligent and with excellent qualifications and had been an enforcement specialist in the Central Region. He moved from Enforcement to Licensing, and because of the unsatisfactory nature of the work of the enforcement specialists, refused to return to Enforcement. Mr. David C. Slayter, of the Atlantic Region, is another example. Like Mr. Carnie, Mr. Slayter is highly qualified and keenly interested in his

work. As an enforcement specialist he was so discouraged that, at one time, he proposed that Enforcement should be removed from the Air Administration and handed over to the RCMP.

COMMENT

Having in mind the extent of aviation in Canada with its vast territory, I think it is unrealistic to expect such a small group of enforcement specialists, with little or no support, to be an effective enforcement arm of the Air Administration.

As of March 31, 1980 there were 22,698 aircraft on the Canadian Civil Aircraft Register, of which 18,324 had a valid existing certificate of airworthiness or a flight permit. 72% of the aircraft on the Register are privately owned, 26% owned by commercial carriers and 2% state aircraft, either federal or provincial. As of that date, there were 59,963 licensed pilots in this country with an additional 25,602 student pilot permits in force (including glider and balloon pilots). As of that date, there were also 884 certificated Canadian air carriers, and 808 carriers of foreign jurisdiction using Canadian airports. There are 1,165 airports in this country, of which 108 are owned and operated by Transport Canada.

As has been noted, out of the 13,000 employees in CATA, there are only 15 enforcement specialists. Enforcement is basically a regional function and for all of Canada there are only 11 enforcement specialists spread over the six regions.

In my opinion enforcement should play an important role in the aviation safety system, which is not the case today. If those entrusted with the duty of enforcement are to be able to carry out their responsibilities, the enforcement arm of the Air Administration should be restructured. Enforcement must be given a higher priority, a greater presence in the aviation community, and the process itself should be made more meaningful. The role of the enforcement specialists and of the inspectors must be clearly defined, and enforcement specialists must receive more assistance. I will subsequently be submitting my recommendations as to how, in my respectful opinion, this can be achieved.

PART III

DELEGATION OF MINISTERIAL AUTHORITY

It has long been recognized that a Minister cannot personally accomplish all the tasks that have been prescribed for him by statute. In order to carry out his responsibilities, the Minister of Transport delegates certain of his duties to others. The officers to whom the principal powers of the Minister to take administrative enforcement action have been delegated with respect to the following regulations set forth at pages 277 and ff. are as follows:

REGULATION

TITLE	212	213	304	407	704	813
Airworthiness Inspector						*
Regional Aeronautical Engineer						
Regional Superintendent, Aeronautical Engineering						*
Civil Aviation Inspector 1, 2 and 3						*
Regional Superintendent of Airways			*			*
Civil Aviation Inspector 4 and 5	*			*		*
Regional Superintendent, Air Regulations	*			*		*
Regional Controller, Civil Aviation	*	*	*	*	*	*
Superintendent, Manufacturing and Maintenance						*

REGULATION

TITLE	212	213	304	407	704	813
Chief, Airworthiness						*
Chief, Accident Investigation						
Superintendent, Air Carrier Inspection, Aircraft and Small Aeroplane	*			*		*
Superintendent, Air Operations Certification	*			*		*
Superintendent, Air Facilities Requirements and Inspection	*		*	*		*
Chief, Operations and Inspection	*		*	*	*	*
Superintendent, Aircraft Licensing and Register	*			*		*
Superintendent, Enforcement	*			*		*
Superintendent, Personnel Licensing	*			*		*
Superintendent, Training & Examinations	*			*		*
Chief, Aeronautical Licensing	*	*	*	*	*	*
Director, Aeronautical Licensing and Inspection	*	*	*	*	*	*
Director, Air Traffic Services						

REGULATION

TITLE	212	213	304	407	704	813
Director, Standards and Legislation						
Deputy Director General, Civil Aeronautics	*	*	*	*	*	*
Director General, Civil Aeronautics	*	*	*	*	*	*

There is an administrative limitation on the authority to suspend commercial, senior commercial, airline transport, flight engineer, air traffic controller, AME licences and related documents. The Regional Controller, Civil Aviation, can suspend these for a maximum period of 14 days; the Regional Superintendent, Air Regulations, for a maximum of 7 days. Other licences, permits, certificates and documents of entitlement may be suspended by the RCCA for a maximum period of 90 days and by the RSAR for a maximum of 7 days. Suspensions for periods exceeding these maxima must be approved by headquarters. The Minister's Delegation Document contains no such restriction on the power of suspension delegated to the RCCA and RSAR.

It should be observed that the delegation to airworthiness inspectors of the power to take action under Regulation 813 took place after Mr. D. T. Berg, Supervisor, Airworthiness Inspector, gave evidence before the Commission when he drew attention to the difficulties experienced by airworthiness inspectors because of the lack of such power.

COMMENT

The Minister of Transport must be enabled to delegate his authority for the enforcement of the safety rules and the imposition of administrative sanction to others. However, in order to have a valid delegation of authority, the enabling statute must authorize it. In many cases there has been a sub-delegation by the delegate. Only such sub-delegation is valid if the enabling statute authorizes it. Otherwise it runs contrary to the legal maxim - delegatus non potest delegare (a delegate cannot delegate). The only specific

reference in the Aeronautics Act to the right of the Minister to delegate is to be found in s. 6(3), previously referred to, which empowers certain delegation of authority to the Deputy Minister.

Support for the present delegation of authority is said to be found in Regulation 838 which provides:

"A reference in these Regulations to the Minister includes, in relation to any particular power, duty or function of the Minister, under these Regulations, a reference to any person authorized by the Minister to exercise or perform such power, duty or function."

That regulation is of doubtful validity and should not be relied upon as the basis for the Minister's power to delegate.

There is, therefore, a serious question whether all those to whom enforcement authority has been granted are legally authorized to act. In addition, the present scheme of delegation and sub-delegation is complex, and those to whom delegated authority has been granted are not clearly delineated. As will be subsequently observed, in those cases where there has been a delegation of authority, the limitation placed on such delegated authority has created considerable difficulty in the enforcement process and has also created friction between headquarters and the regions.

The revisions to the Aeronautics Act presently being undertaken by the Aeronautics Task Force should make special reference to the authority of the Minister to delegate and the delegation should be clearly delineated. I will subsequently be making recommendations as to the nature and extent of such delegation of authority.

PART IV

ENFORCEMENT STATISTICS OBTAINED FROM THE CANADIAN AIR TRANSPORTATION ADMINISTRATION

<u>TABLE</u>	<u>TITLE</u>
1	National Disposition of Deterrent Actions
2	Cases Abandoned - 1979
3	Deterrent Actions by Licence Category
4	Regulations Most Frequently Cited in Deterrent Actions
5	Regional Disposition of Deterrent Actions
6	Regional Breakdown of Deterrent Actions
7	Violation Detection Sources
8	Disposition of Prosecuted Offences
9	Prosecution Cases by Licence Category
10	Regulations Most Frequently Cited in Prosecutions
11	Regional Totals of Prosecution Cases
12	Suspensions by Licence Category
13	Regulations Most Frequently Cited in Licence Suspensions
14	Regional Totals of Suspension Cases
15	Warning Letters by Licence Category
16	Most Frequently Cited Regulations in Warning Letters
17	Regional Totals of Warning Letters
18	Regional Actions in Regulations Violated Most Often in 1979

<u>GRAPHS</u>	<u>TITLE</u>
A	Disposition of Total Deterrent Action
B	Cases Abandoned - 1979
C	Deterrent Actions by Licence Category
D	Regulations Most Frequently Cited
E	Regional Totals of Deterrent Actions
F	Regional Breakdown of Deterrent Actions
G	Violation Detection Sources
H	Disposition of Prosecutions
I	Prosecution by Licence Category
J	Regulations Most Frequently Cited in Prosecutions
K	Regional Totals of Prosecution Cases
L	Suspensions by Licence Category
M	Regulations Most Frequently Cited in Suspensions
N	Regional Totals of Suspensions
O	Warnings by Licence Category
P	Regulations Most Frequently Cited in Warnings
Q	Warnings by Region
R	Deterrent Actions Related to Flying Hours
S	Deterrent Actions Related to Numbers of Personnel Licences

"EXPLANATORY NOTES

Enforcement of the Air Regulations and Air Navigation Orders is shared by Transport Canada and the RCMP. Related legal services are provided through the Department of Justice. Where sufficient evidence of a violation is acquired, administrative or judicial action may be taken.

Administrative action consists of either licence suspension pursuant to Section 407 paragraph (a) of the Air Regulations, Chapter 2 of the Consolidated Regulations of Canada, or a Letter of Warning. Judicial action consists of Prosecution pursuant to Sections 6(4) or 6(5) of the Aeronautics Act.

The statistical presentations contained herein are based upon deterrent actions concluded during the 1979 calendar year and reported to Headquarters by the Regional Offices.

The term 'Deterrent Actions' means an action terminating in the prosecution of an alleged offender, suspension of a licence held by the alleged offender, or a Letter of Warning addressed to the alleged offender. Cases of alleged violations where investigation failed to produce essential evidence are identified as 'Discontinued' cases.

On August 15, 1979, the Air Regulations and Air Navigation Orders were revoked and substituted by appropriate chapters of the Consolidated Regulations of Canada, 1978 as provided by the Statute Revision Act.

The effect of this transition is minimal except for a significant change in numbering of the Regulations. To avoid possible confusion both the revised and the former Air Regulations numbers are cited. Air Navigation Orders continue to be quoted as before.

The six Canadian Air Transportation Administration Regions are, Atlantic, Quebec, Ontario, Central, Western and Pacific. These titles are used in this document to represent the respective region."

TABLE 1

NATIONAL DISPOSITION OF DETERRENT ACTIONS
PROSECUTIONS - SUSPENSIONS - WARNINGS

Total deterrent actions were up 13.5% from 1978. Warning letters issued increased by 14.90%. Licence suspensions were up 40.91%. Prosecution cases reduced by 2.1%.

<u>Disposition</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>
Prosecutions	134	169	145	142
Suspensions	57	48	66	93
Warnings	<u>86</u>	<u>118</u>	<u>322</u>	<u>370</u>
Total Deterrent Actions	277	335	533	605
Discontinued Cases	No Count	No Count	<u>174</u>	<u>142</u>
Total Cases	-	-	707	747

TABLE 2

CASES DISCONTINUED - 1979

In 1979 out of 142 cases in which No Further Action was taken the most common factor in that decision was that the explanation offered by the pilot/operator (41%) was found to be acceptable. 25% of the cases had to be abandoned for lack of evidence. In 24% of the cases investigation of the detection report revealed no actual violation.

	<u>Unfounded</u>	<u>Lack of Evidence</u>	<u>Explanation Accepted</u>	<u>Unenforceable</u>	<u>Foreign</u>	<u>Other</u>	<u>Total</u>
Atlantic	8	10	10	3	2	4	37
Quebec	7	6	7	1	0	2	23
Ontario	7	8	17	0	0	0	32
Central	3	6	5	0	1	1	16
Western	4	4	15	0	0	0	23
Pacific	<u>5</u>	<u>2</u>	<u>4</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>11</u>
Total	34	36	58	4	3	7	142

TABLE 3

DETERRENT ACTIONS BY LICENCE CATEGORY

A significant increase of actions against Airline Transport Pilot Licences is indicated.

<u>Licence Category</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>Trend</u>
None or Invalid or Foreign	10	26	29	11.5% Increase
Student Pilot	10	20	14	30% Decrease
Private Pilot	147	199	242	21.6% Increase
Commercial Pilot	84	156	186	19.2% Increase
Senior Commercial	11	21	18	14.3% Decrease
Airline Transport	22	34	54	58.8% Increase
Other	<u>1</u>	<u>2</u>	<u>Nil</u>	<u>Decrease</u>
Total Pilots	285	458	543	17.9% Increase
AME	19	34	31	8.8% Decrease
ATC	3	2	Nil	Decrease
O.C. Holders	<u>27</u>	<u>39</u>	<u>31</u>	<u>20.5% Decrease</u>
Total Actions	334	533	605	13.5% Increase

TABLE 4

REGULATIONS MOST FREQUENTLY CITED IN DETERRENT ACTIONS

Regulations/C.R.C. most frequently cited are once again: 210/210 (C of A not in force); 529/534 (low flying) and 821/825 (Documents not on board).

<u>Regulations/C.R.C. and A.N.O.</u>		<u>1977</u>	<u>1978</u>	<u>1979</u>
210/210	C of A not in force	35	50	90
529/534	Low Flying	68	73	86
821/825	Documents not on Board	34	79	58
515/520	Reckless or Negligent Flying	30	27	47
400/400	No Valid Licence	39	36	43
V, 4	Flight Plan Order	11	27	42
V, 21	PCZ Order	2	41	40
516/521	Aerodrome Rules of Air	12	32	38
505/506	Compliance with ATC Instructions	11	18	34
219/220	Damage Notification, Unairworthy	18	26	28
408/408	Medical Unfitness	17	17	25
200/200	Aircraft not Registered	17	28	24
542/544	Fuel, Oil for VFR Flight	7	11	21
809/811	Altering, Falsification of Documents	8	18	20
504/505	Not Familiarizing with Available Information	7	19	18
552/554	Landing Minima	1	5	17
802/804	Aerodrome Lighting	0	13	13
700/700	O.C. for Commercial Air Service	7	4	12
801/803	Engine Starting	9	6	9
822/826	Log Books	4	20	12
IV, 1	Personnel Licences	11	19	2

TABLE 5

REGIONAL DISPOSITION OF DETERRENT ACTIONS

Pacific shows an increase of 112.7% in 1979. Quebec and Western show decreases of 17.1% and 11.8% respectively.

<u>Region</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>Trend</u>
Atlantic	39	69	71	2.9% Increase
Quebec	32	111	92	17.1% Decrease
Ontario	106	77	83	7.8% Increase
Central	75	136	167	22.8% Increase
Western	46	85	75	11.8% Decrease
Pacific	<u>37</u>	<u>55</u>	<u>117</u>	<u>112.7% Increase</u>
Total	335	533	605	13.5% Increase

TABLE 6

REGIONAL BREAKDOWN OF DETERRENT ACTIONS

Deterrent actions taken for an infraction can be administrative, i.e. warning or suspension, or prosecution. Nationally these statistics show that in 1979, 77% of the deterrent actions were administrative. In 1977 the ratio was 49% and in 1978 it increased to 58%. Regionally Atlantic with 96% and Pacific 94%, record a higher ratio of administrative action. Quebec at 58% and Ontario at 57% indicate a higher ratio of prosecution.

<u>REGION</u>	<u>1977</u>		<u>1978</u>		<u>1979</u>	
	Admin. Actions As % of Total Deterrent Actions	Admin. Actions As % of Total Deterrent Actions	Admin. Actions As % of Total Deterrent Actions	Admin. Action	Prosecutions	Total
Atlantic	69%	75%		68	3	71
Quebec	25%	21%		53	39	92
Ontario	45%	72%		47	36	83
Central	39%	66%		126	41	167
Western	72%	72%		59	16	75
Pacific	<u>57%</u>	<u>73%</u>		<u>110</u>	<u>7</u>	<u>117</u>
Total	49%	58%		463	142	605
						77%

TABLE 7

VIOLATION DETECTION SOURCES

The leading source of detection once again is Air Traffic Services followed by TC Inspectors. Detections by Inspections and by RSAR are high in Central Region and low in the Ontario and Western Regions.

	ATS Air Traffic Services	Insp. TC Inspection	Public	RCMP	RSAR	Accident	Incident	DND	Foreign FAA etc.	Other
Atlantic	44	26	15	3	5	1	-	6	-	14
Quebec	29	17	8	30	12	7	-	-	1	8
Ontario	34	7	21	17	3	5	3	3	7	13
Central	51	53	17	31	17	11	-	2	-	6
Western	25	6	8	9	1	7	2	-	1	35
Pacific	<u>41</u>	<u>33</u>	<u>39</u>	<u>15</u>	<u>2</u>	<u>9</u>	<u>4</u>	<u>2</u>	<u>2</u>	<u>6</u>
Totals	224	142	108	105	40	40	9	13	11	82
% of Total	28.9%	18.3%	13.9%	13.6%	5.2%	5.2%	1.2%	1.7%	1.4%	10.6%

TABLE 8

PROSECUTIONS
DISPOSITION OF PROSECUTED OFFENCES

In 1979 fewer cases were prosecuted. However, there was a higher number of offences charged and a higher number of guilty pleas recorded. The overall conviction rate shows an upward trend. The conviction rate on Not Guilty pleas was up to 58.4% in 1979.

<u>Disposition</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>
Total Offences	301	222	298
Plea - Guilty/Not Guilty	No Count	140/82	221/77
Convictions	244	174	264
Convictions (Guilty Plea)	No Count	34	45
Dismissals, Stays, etc.	57	48	34
Overall Conviction Rate	79%	78%	88.6%
Conviction Rate on Not Guilty Plea	No Count	41%	58.4%

TABLE 9

PROSECUTION CASES BY LICENCE CATEGORY

This table shows little change in the number of prosecutions of private and commercial pilots over the past three years.

<u>Licence Category</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>Trend</u>
Nil, Invalid or Foreign	10	12	18	50% Increase
Student Pilot Permit	7	11	5	55% Decrease
Private Pilot	64	59	63	7% Increase
Commercial Pilot	47	40	40	Nil
Senior Commercial Pilot	9	1	3	200% Increase
Airline Transport Pilot	5	4	1	75% Decrease
Other (Glider, Balloon)	<u>0</u>	<u>1</u>	<u>0</u>	<u>Decrease</u>
Total Pilots	142	128	130	2% Increase
Companies with Operating Certificates	26	16	11	31% Decrease
Aircraft Maintenance Engineers	0	0	1	Increase
Air Traffic Controllers	<u>0</u>	<u>0</u>	<u>0</u>	<u>Nil</u>
Grand Total	168	144	142	2% Decrease

TABLE 10

REGULATIONS MOST FREQUENTLY CITED IN PROSECUTIONS

529/534 (Low Flying) continues to be the most frequently prosecuted offence, followed by 210/210 (Certificate of Airworthiness) and 821/825 (Documents not on board).

Regulation C.R.C. or A.N.O.	<u>NUMBER OF VIOLATIONS</u>				<u>F I N E S</u>			
	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1977 Average</u>	<u>1978 Average</u>	<u>1979 Average</u>	<u>1979 Low</u>	<u>1979 High</u>
529/534	50	45	46	\$ 330	\$ 310	\$ 299	\$ 25	\$1,000
210/210	22	10	33	245	75	159	25	1,000
821/825	26	29	25	80	103	72	25	100
408/408	15	7	17	390	260	186	50	600
400/400	29	16	14	224	178	165	25	1,025
515/519	12	13	12	600	250	521	200	1,000
700/700	7	4	11	187	337	111	50	300
200/200	17	15	7	92	87	72	10	150
815/817	0	1	7	0	300	75	75	75
VIII, 2	0	2	6	0	25	65	15	100
II, 2	14	0	5	105	0	200	100	350
510/515	0	3	5	0	0	200	200	200
* 822/826	4	15	61	100	70	110	75	400

* One person convicted with 54 counts in 1979.

TABLE 11

REGIONAL TOTALS OF PROSECUTION CASES

There is a slight decline in the National numbers for 1979. Quebec and Ontario show increase while Atlantic, Central, Western and Pacific show decreases.

<u>Region</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>Trend</u>
Atlantic	12	9	3	67% Decrease
Quebec	24	30	39	30% Increase
Ontario	58	21	36	17% Increase
Central	46	46	41	11% Decrease
Western	13	24	16	33% Decrease
Pacific	<u>16</u>	<u>15</u>	<u>7</u>	<u>53% Decrease</u>
Total	169	145	142	2% Decrease

TABLE 12

SUSPENSIONS BY LICENCE CATEGORY

Suspensions increased by 39% in 1979.

<u>Region</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>Trend</u>
Nil, Invalid or Foreign	0	0	0	Nil
Student Pilot Permit ¹⁾	0	3	4	33% Increase
Private Pilot	30	24	36	50% Increase
Commercial Pilot	8	17	23	35% Increase
Senior Commercial Pilot	0	4	4	Nil
Airline Transport Pilot	3	6	11	83% Increase
Other, (Glider, Balloon)	<u>0</u>	<u>0</u>	<u>0</u>	<u>Nil</u>
Total Pilots	41	54	78	44% Increase
Companies with Operating Certificates	0	0	0	Nil
Aircraft Maintenance Engineer	7	12	15	25% Increase
Air Traffic Controller	<u>0</u>	<u>1</u>	<u>0</u>	<u>Decrease</u>
Grand Total	48	67	93	39% Increase

TABLE 13

REGULATIONS MOST FREQUENTLY
CITED IN LICENCE SUSPENSIONS

During 1979, 529/534 (Low Flying) replaced 219A/221 and 210/210 as the most frequently cited regulation in licence suspension cases.

<u>Regulation/C.R.C. or A.N.O.</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>
529/534 (Low Flying)	4	6	15
809/811 (Altering Documents etc.)	0	6	14
219A/221 (Damage Notification, Unairworthy)	6	10	12
400/400 (Personnel Licences)	0	4	11
516/520 (Aerodrome Regulations)	4	3	10
542/544 (Sufficient Fuel)	5	5	10
210/210 (C of A not in Force)	6	10	9
V, 21 (PCZ Order)	0	7	9
505/506 (ATC Instructions)	0	2	8
515/519 (Reckless Flight)	8	1	7
V, 4 (Flight Plan)	0	0	5
408/408 (Disability)	3	1	4
821/825 (Documents not on Board)	0	7	3
200/200 (A/C Registration)	1	1	3

TABLE 14

REGIONAL TOTALS OF SUSPENSION CASES

Pacific recorded a very high increase (275%) with Atlantic (73%) next in 1979 suspension cases. The rest of the Regions showed no significant deviation from 1978 figures.

<u>Region</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>Trend</u>
Atlantic	8	11	19	73% Increase
Quebec	1	7	5	29% Decrease
Ontario	12	13	12	8% Decrease
Central	13	21	20	5% Decrease
Western	8	7	7	Nil
Pacific	<u>6</u>	<u>8</u>	<u>30</u>	<u>275% Increase</u>
Total	48	67	93	41% Increase

TABLE 15

WARNING LETTERS BY LICENCE CATEGORY

Warnings to pilots increased by 22% in 1979. The major increase in 1979 is recorded for Airline Transport Pilots with 75%, followed by Commercial Pilot 24% and Private Pilot 24%.

<u>Licence Category</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>Trend</u>
Nil, Invalid or Foreign	0	14	11	21% Decrease
Student Pilot Permit	3	6	5	17% Decrease
Private Pilot	53	115	143	24% Increase
Commercial Pilot	29	99	123	24% Increase
Senior Commercial Pilot	2	16	11	45% Decrease
Airline Transport Pilot	14	24	42	75% Increase
Other (Glider, Balloon)	<u>1</u>	<u>1</u>	<u>0</u>	<u>Decrease</u>
Total Pilots	102	275	335	22% Increase
Companies with Operating Certificates	3	23	20	13% Decrease
Aircraft Maintenance Engineers	12	22	15	32% Decrease
Air Traffic Controllers	<u>1</u>	<u>1</u>	<u>0</u>	<u>Decrease</u>
Grand Total	118	321	370	15% Increase

TABLE 16

MOST FREQUENTLY CITED REGULATIONS
IN WARNING LETTERS

Most frequently cited in Warning Letters were: Section 210/210 (C of A not in force), A.N.O. V, No. 4 (Flight Plan) and Section 821/825 (Documents not on board).

<u>Regulation/C.R.C. or A.N.O.</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>
210/210 (C of A not in Force)	7	30	48
V, 4 (Flight Plan)	11	24	37
821/825 (Documents not on Board)	8	43	30
V, 21 (PCZ Order)	2	30	29
516/520 (Rules concerning aerodromes)	8	29	28
515/519 (Reckless Flying)	10	13	28
505/506 (ATC Clearances)	11	16	26
529/534 (Low Flying)	14	22	25
400/400 (Personnel Licences)	13	16	18
552/555 (Landing Minima)	1	4	17
504/505 (Not Familiarizing with Information)	5	17	17
219A/221 (Airworthiness)	12	12	16
200/200 (A/C Registration)	0	12	14
542/544 (Sufficient Fuel)	2	6	11
802/804 (Aerodrome Lighting)	0	6	10
801/803 (Engine Starting)	4	5	7
408/408 (Disability)	2	9	4

TABLE 17

REGIONAL TOTALS OF WARNING LETTERS

The sharp increase in the number of warning letters in 1978 abated in 1979, rising by only 15%.

<u>Region</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>Trend</u>
Atlantic	19	49	49	Nil
Quebec	7	75	48	36% Decrease
Ontario	36	42	35	17% Decrease
Central	16	69	106	64% Increase
Western	25	54	52	4% Decrease
Pacific	<u>15</u>	<u>32</u>	<u>80</u>	<u>150% Increase</u>
Total	118	321	370	15% Increase

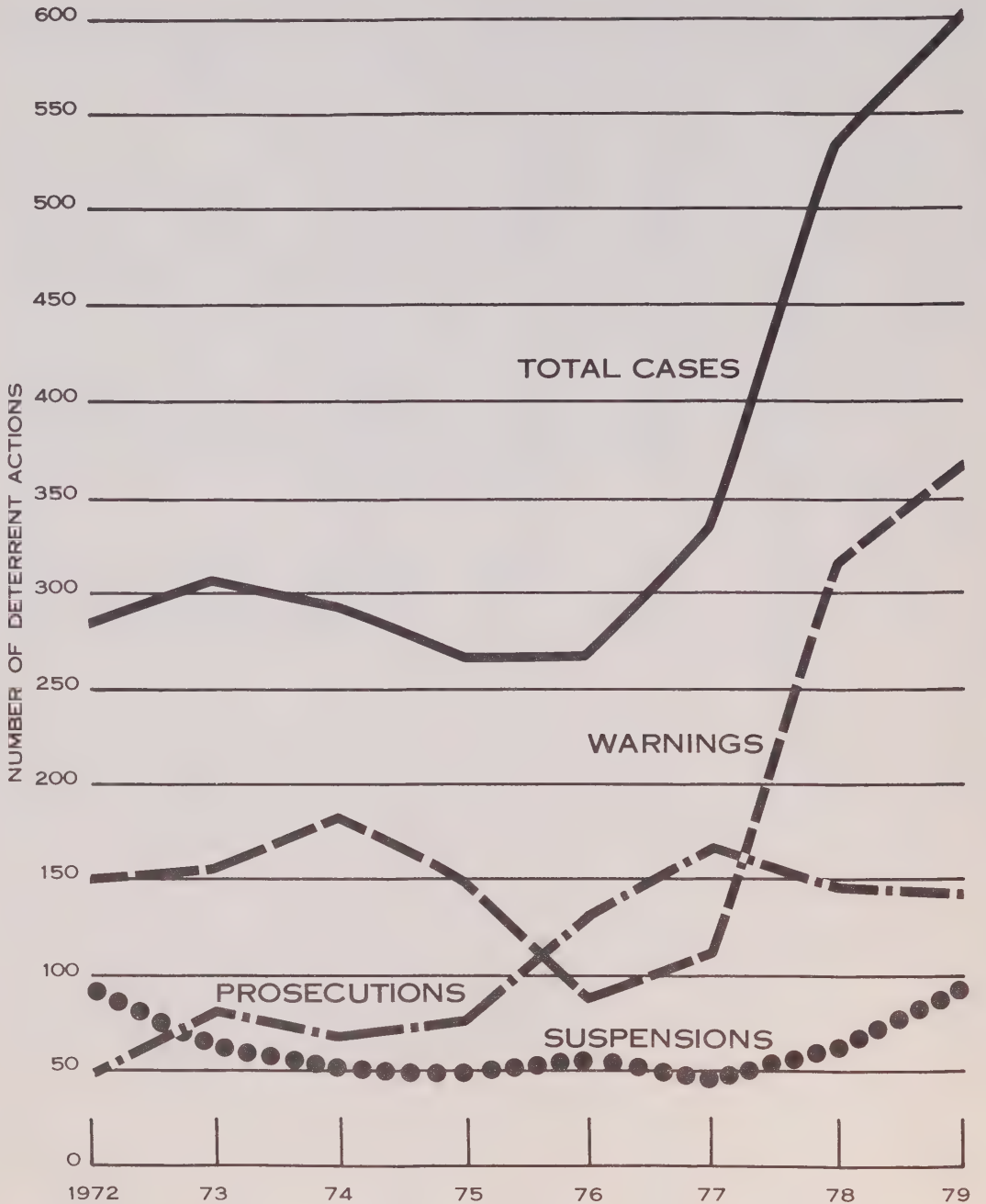
TABLE 18

REGIONAL ACTIONS IN REGULATIONS VIOLATED
MOST OFTEN IN 1979

Regulation/ C.R.C.	Atlantic	Quebec	Ontario	Central	Western	Pacific	
529/534	Total Actions	8	18	26	9	5	20
	Prosecution	1 (12%)	14 (78%)	18 (69%)	5 (56%)	4 (80%)	4 (20%)
	Admin. Action	7 (88%)	4 (22%)	8 (31%)	4 (44%)	1 (20%)	16 (80%)
	Total Actions	3	20	6	25	0	4
821/825	Prosecution	0 (0%)	18 (90%)	3 (50%)	4 (16%)	0 (0%)	0 (0%)
	Admin. Action	3 (100%)	2 (10%)	3 (50%)	21 (84%)	0 (0%)	4 (100%)
	Total Actions	14	14	10	36	10	6
	Prosecution	0 (0%)	3 (21%)	6 (60%)	22 (61%)	1 (10%)	1 (17%)
210	Admin. Action	14 (100%)	11 (79%)	4 (40%)	14 (39%)	9 (90%)	5 (83%)
	Total Actions	6	10	7	11	1	12
	Prosecution	0 (0%)	3 (30%)	2 (29%)	4 (36%)	0 (0%)	3 (25%)
	Admin. Action	6 (100%)	7 (70%)	5 (71%)	7 (64%)	1 (100%)	9 (75%)

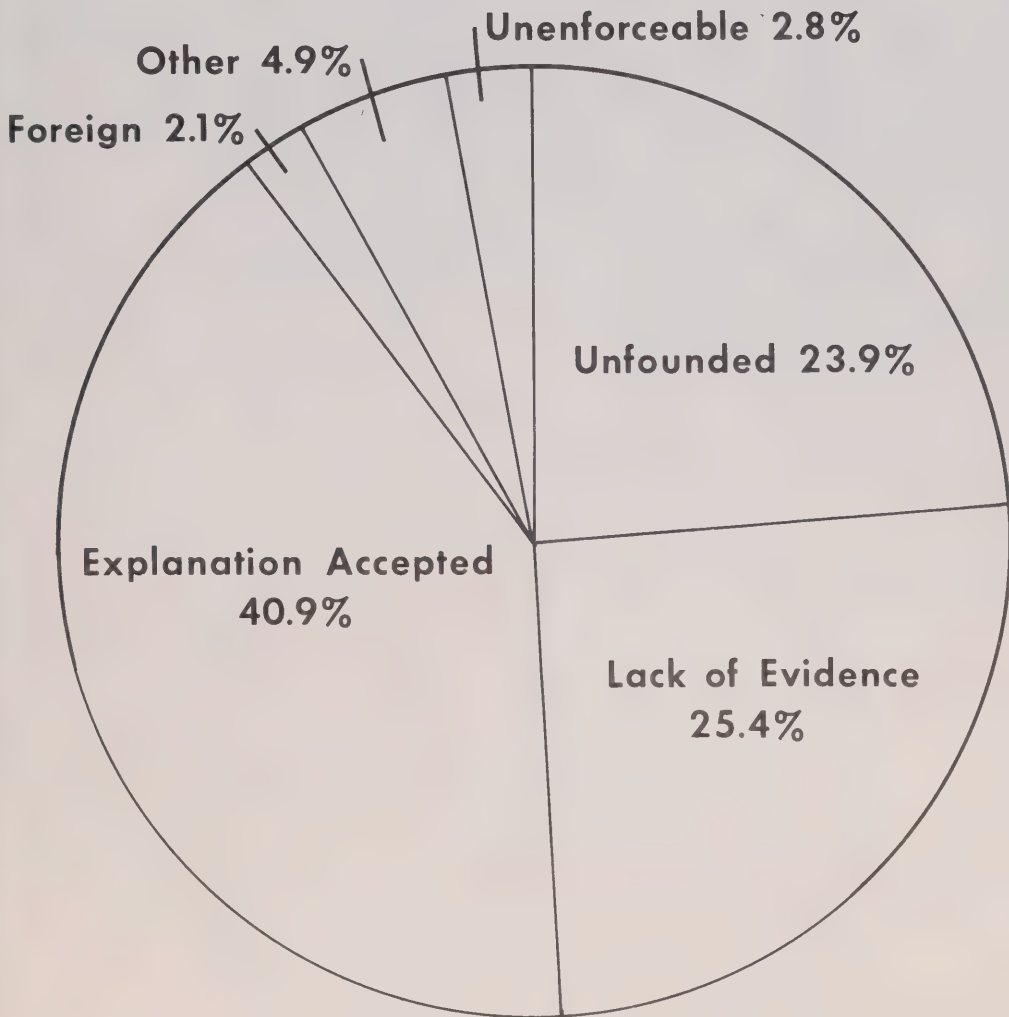
GRAPH A

DISPOSITION OF TOTAL DETERRENT ACTIONS



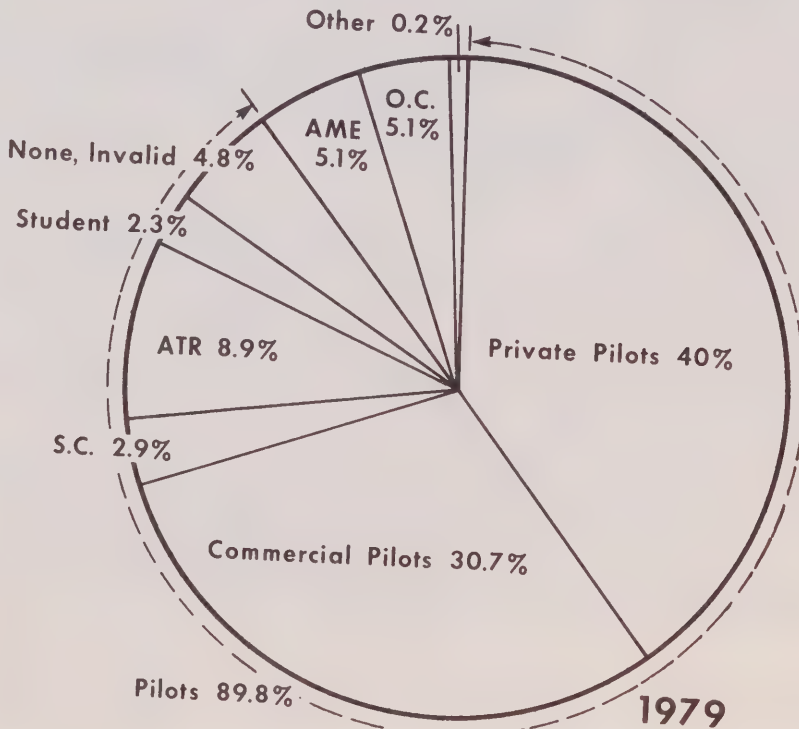
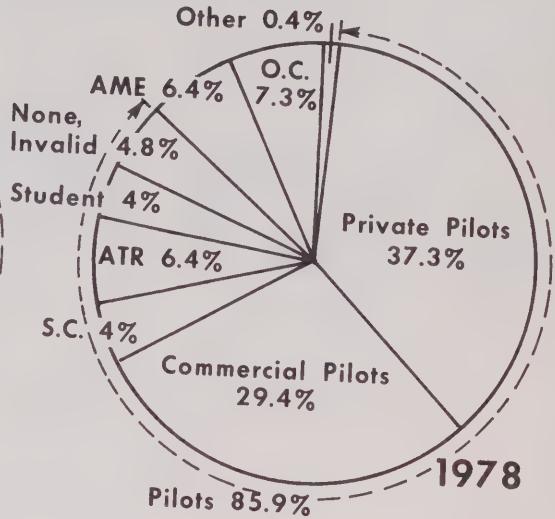
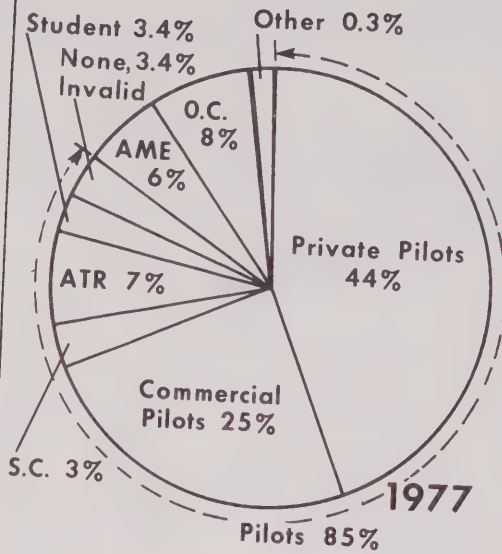
GRAPH B

CASES ABANDONED - 1979



GRAPH C

DETERRENT ACTIONS BY LICENCE CATEGORY

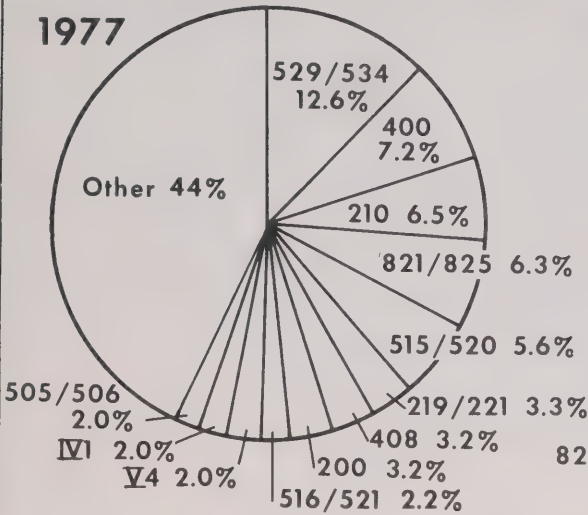


GRAPH D

REGULATIONS MOST FREQUENTLY CITED

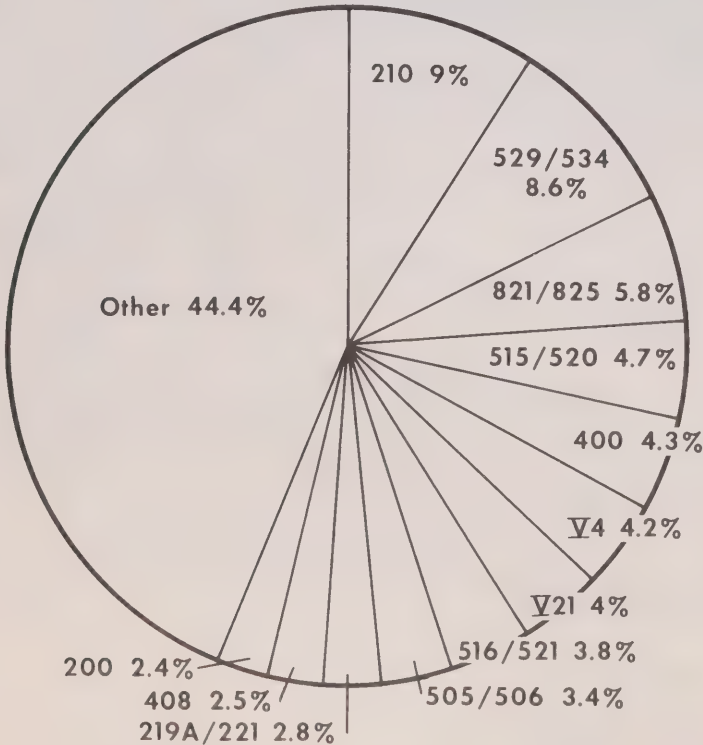
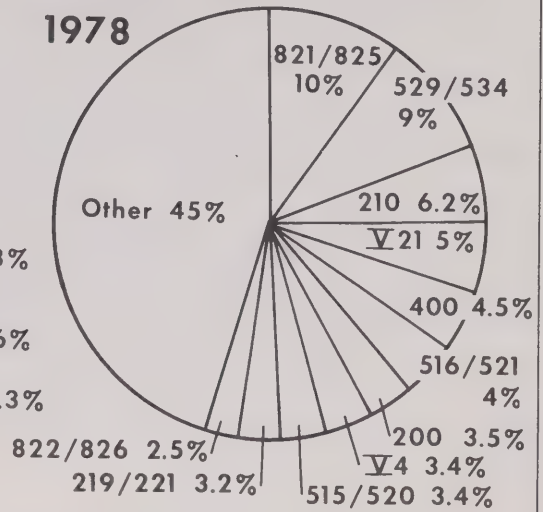
538 REGS CITED IN 335 CASES

1977



788 REGS CITED IN 533 CASES

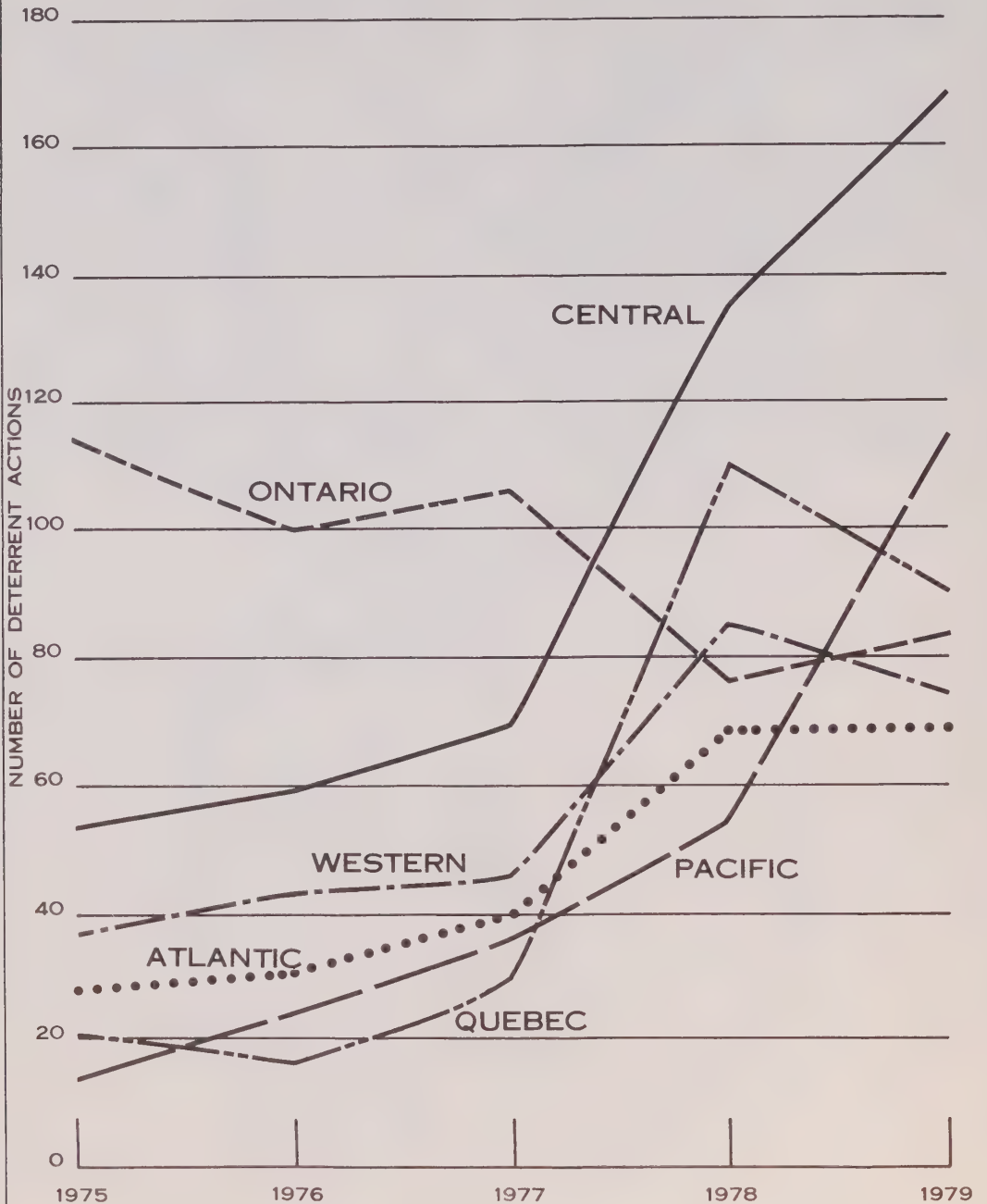
1978



1979 995 REGS CITED IN 605 CASES

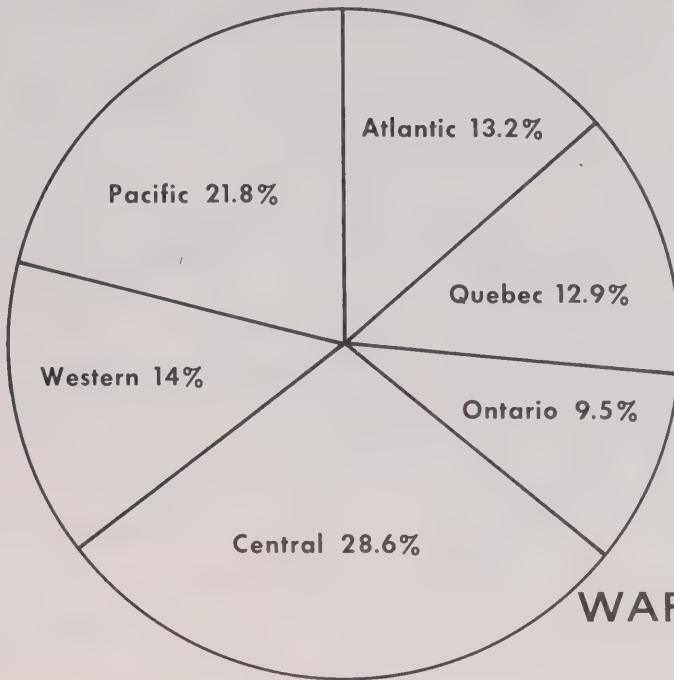
GRAPH E

REGIONAL TOTALS OF DETERRENT ACTIONS

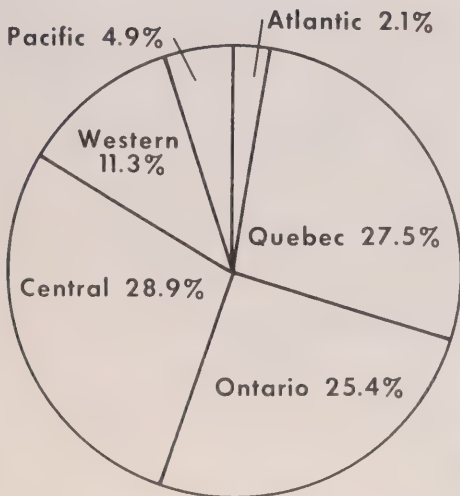


GRAPH F

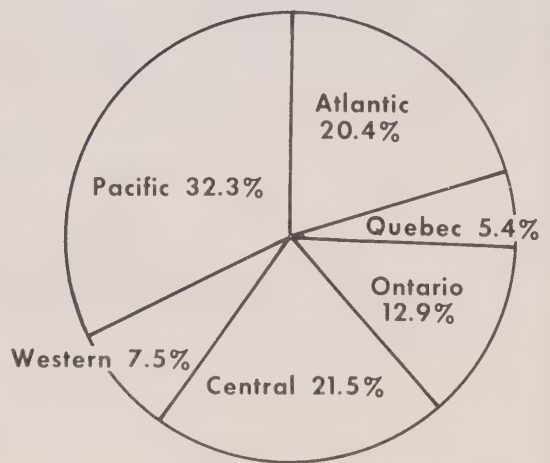
REGIONAL BREAKDOWN OF DETERRENT ACTIONS



WARNINGS



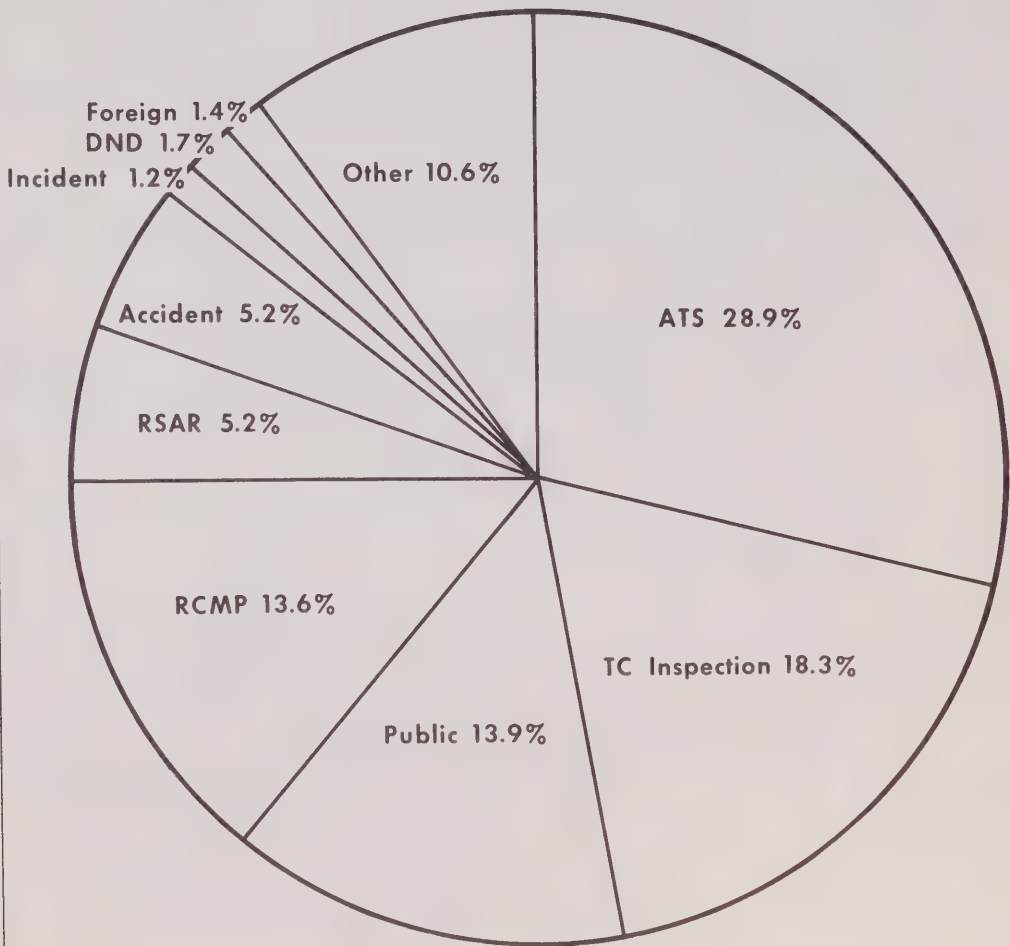
PROSECUTIONS



SUSPENSIONS

GRAPH G

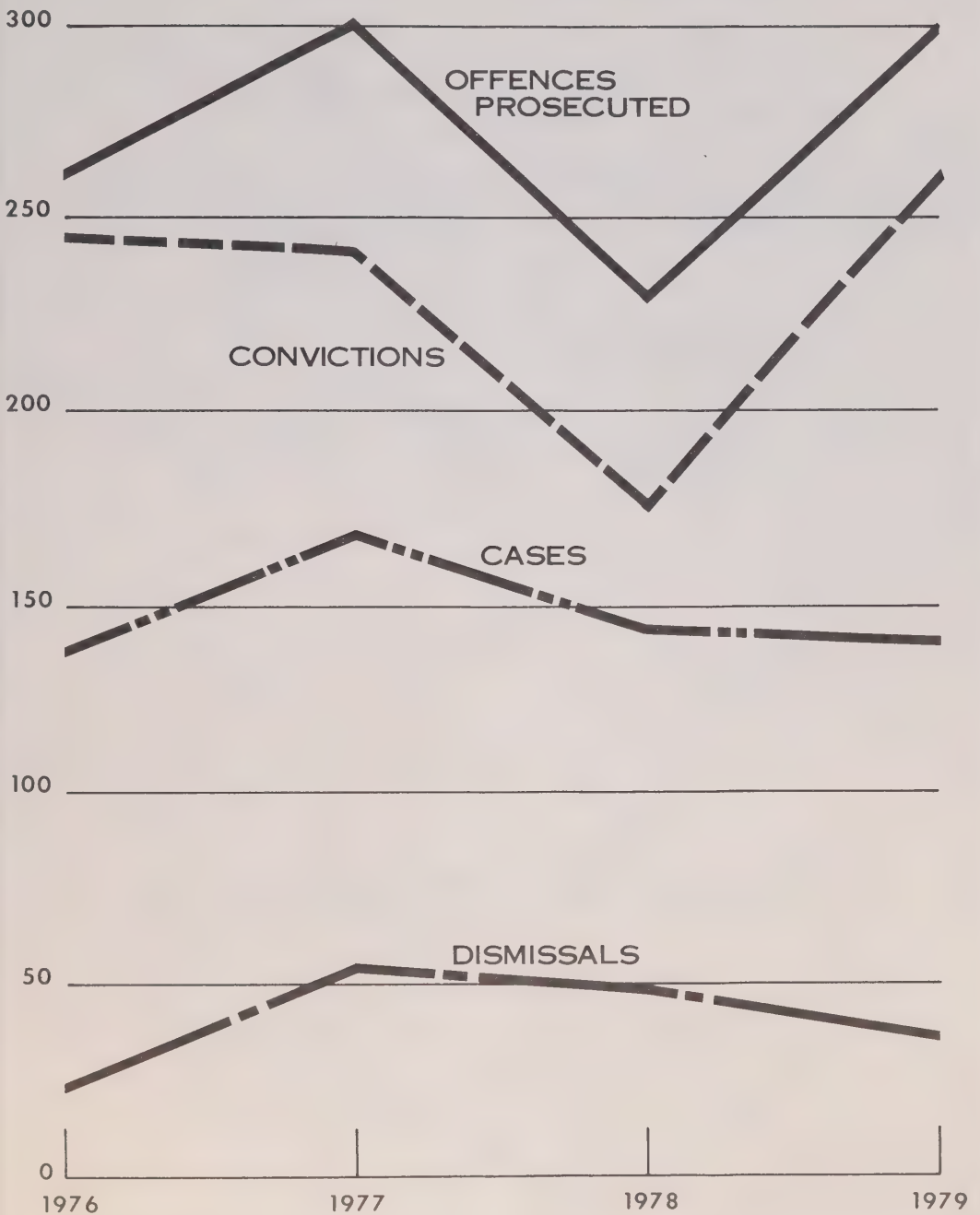
VIOLATION DETECTION SOURCES



1979

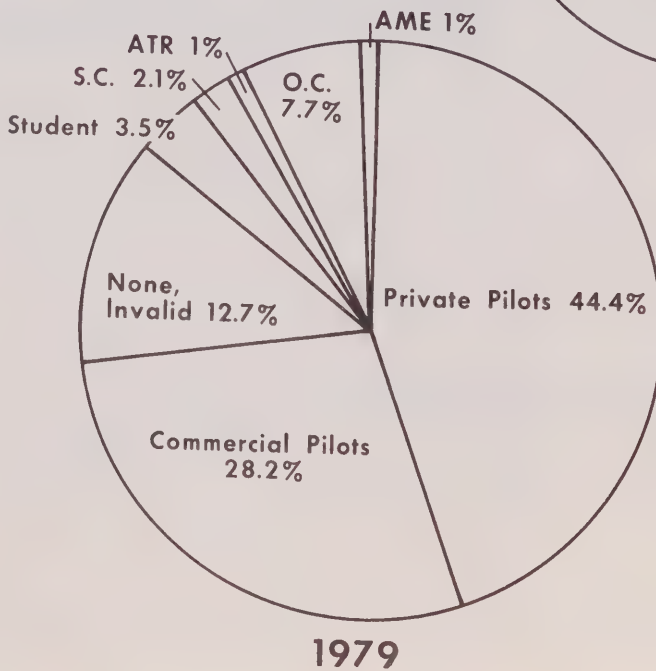
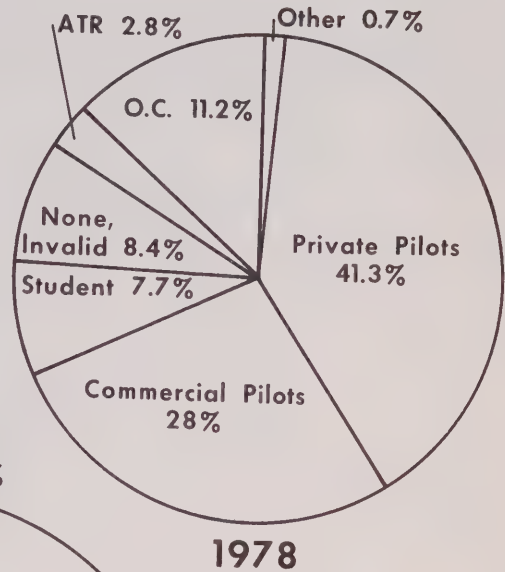
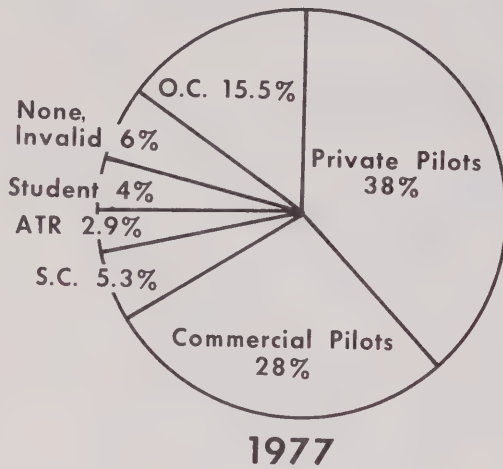
GRAPH H

DISPOSITION OF PROSECUTIONS



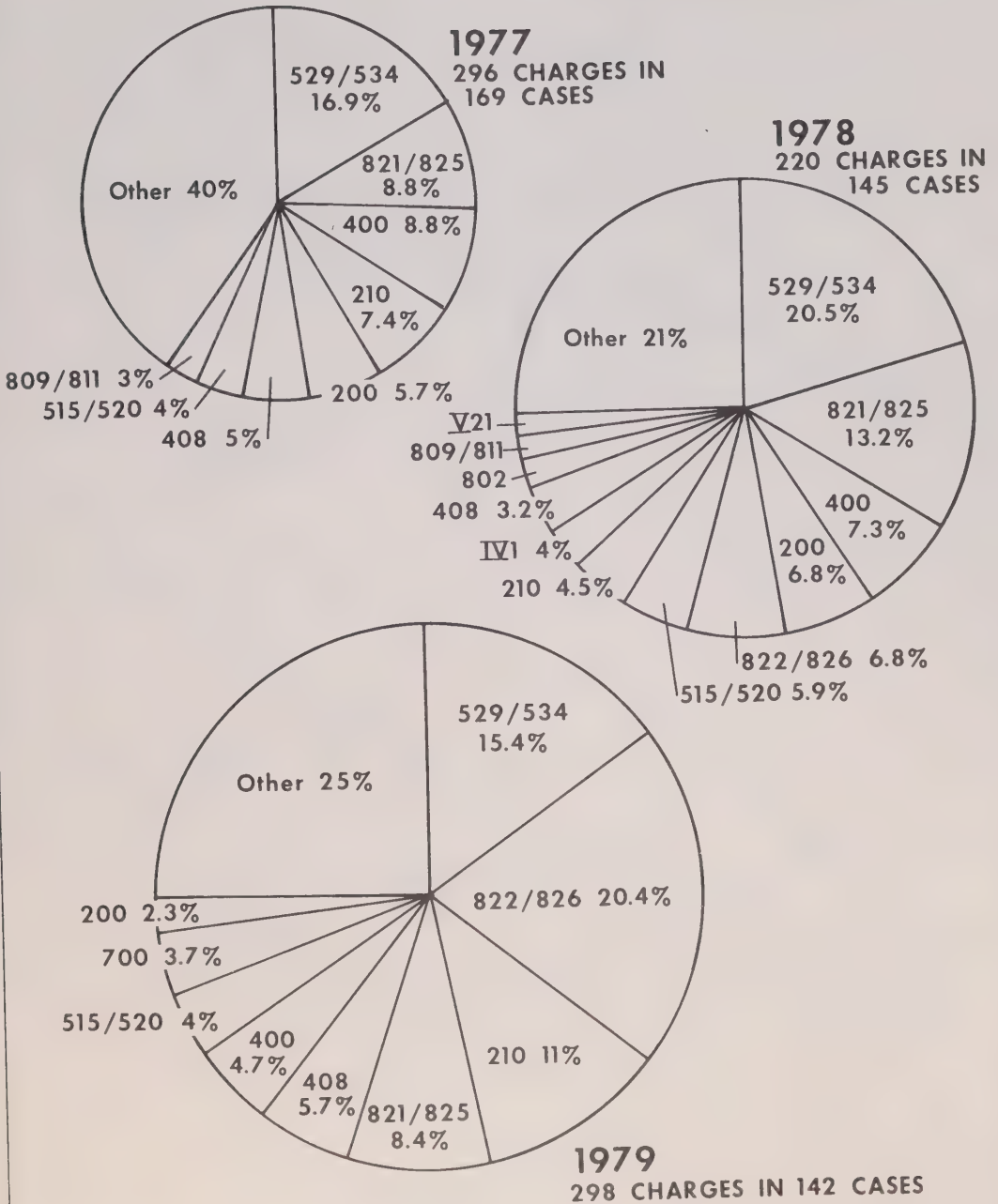
GRAPH I

PROSECUTION BY LICENCE CATEGORY



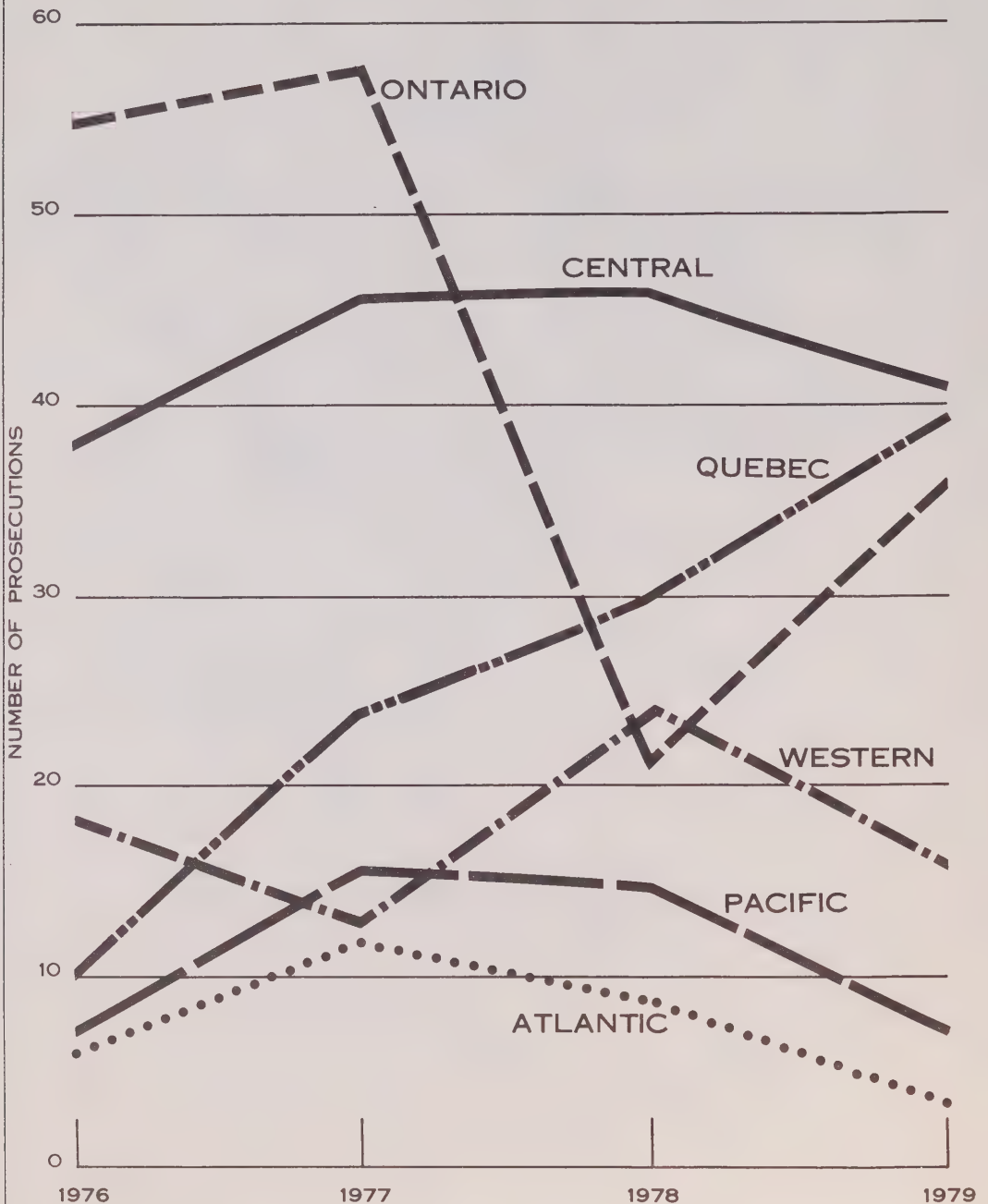
GRAPH J

REGULATIONS MOST FREQUENTLY CITED IN PROSECUTIONS



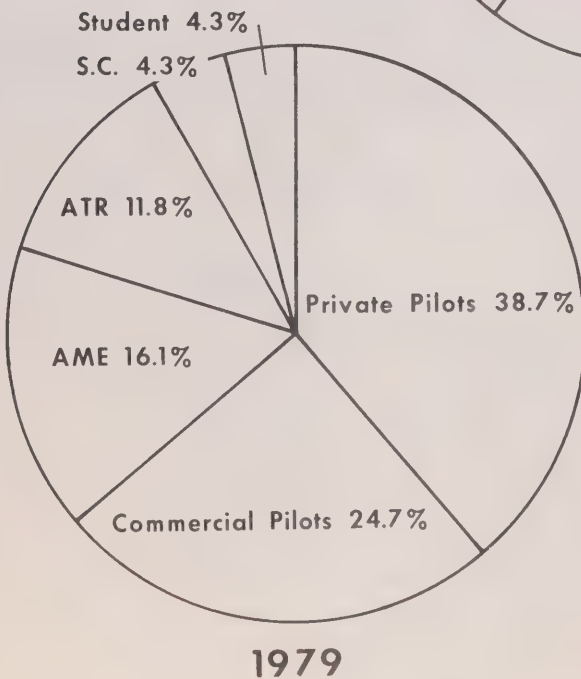
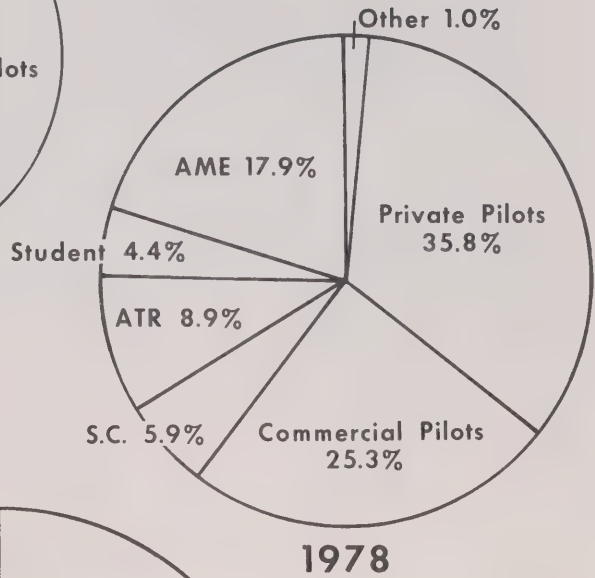
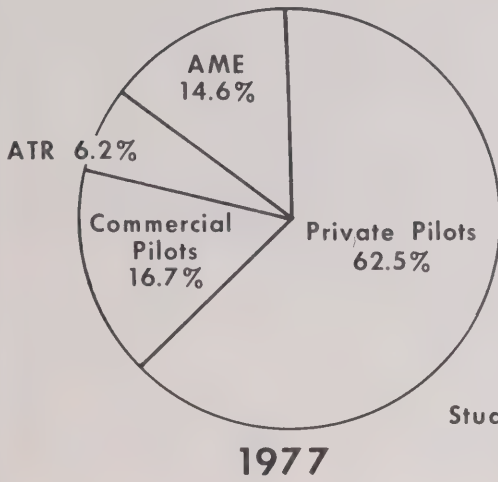
GRAPH K

REGIONAL TOTALS OF PROSECUTION CASES



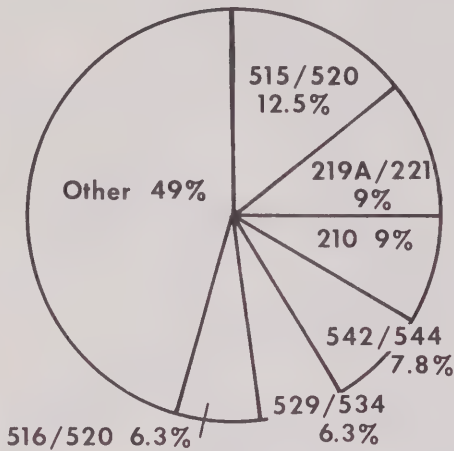
GRAPH L

SUSPENSIONS BY LICENCE CATEGORY



GRAPH M

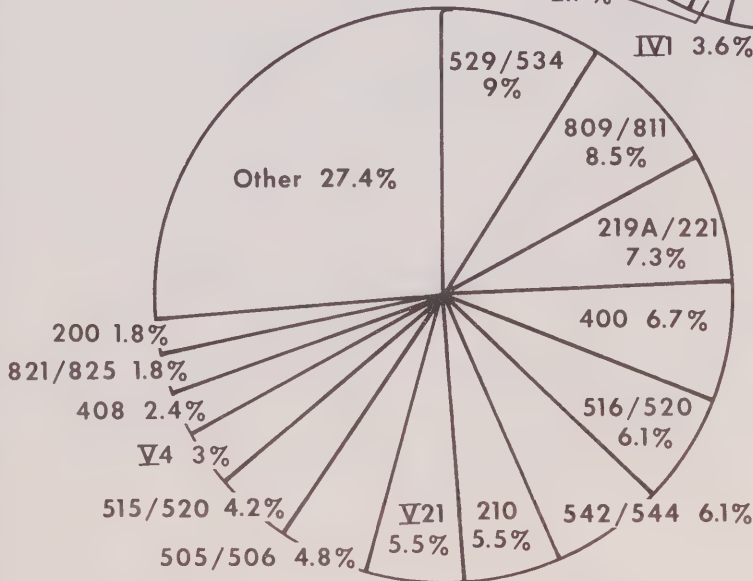
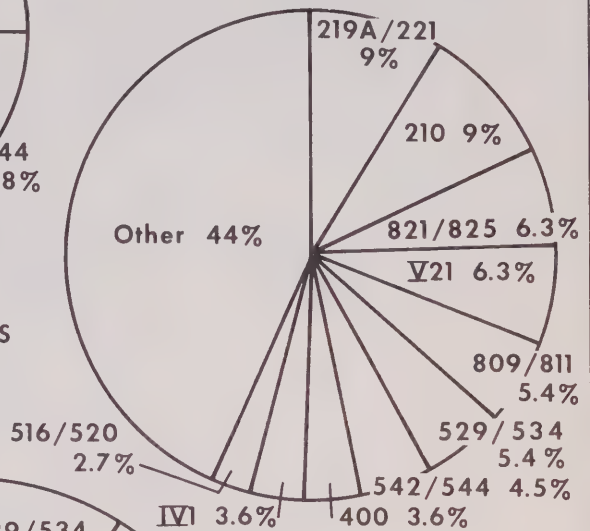
REGULATIONS MOST FREQUENTLY CITED IN SUSPENSIONS



1977

64 REGS CITED IN 48 CASES

1978
111 REGS CITED IN 66 CASES

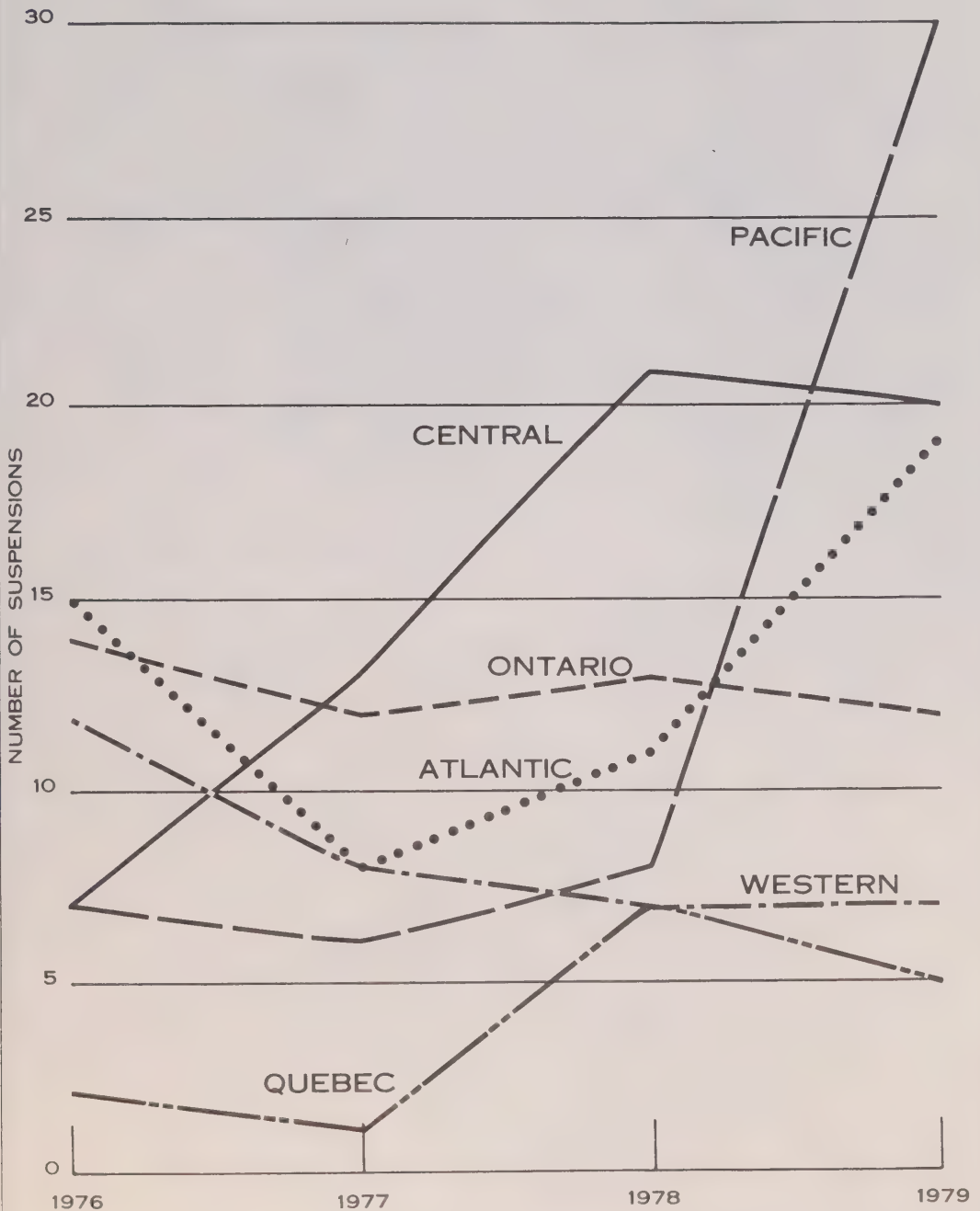


1979

165 REGS CITED IN 93 CASES

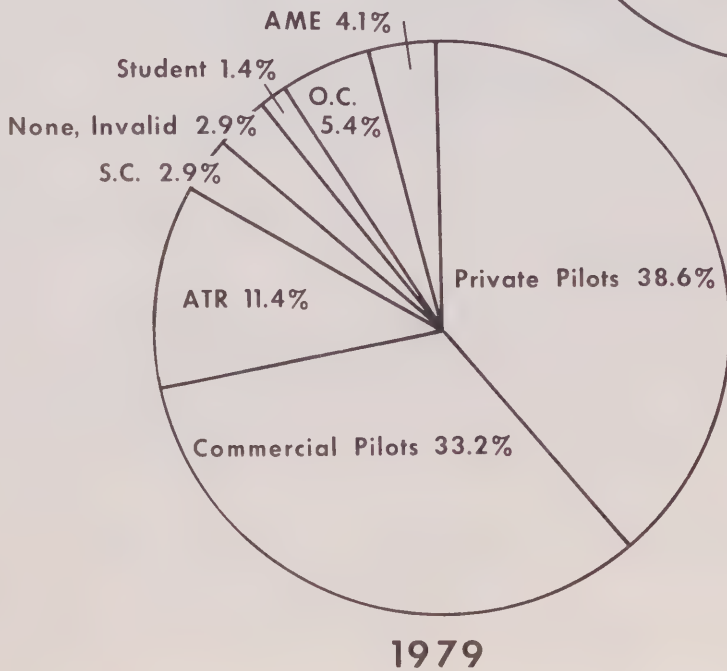
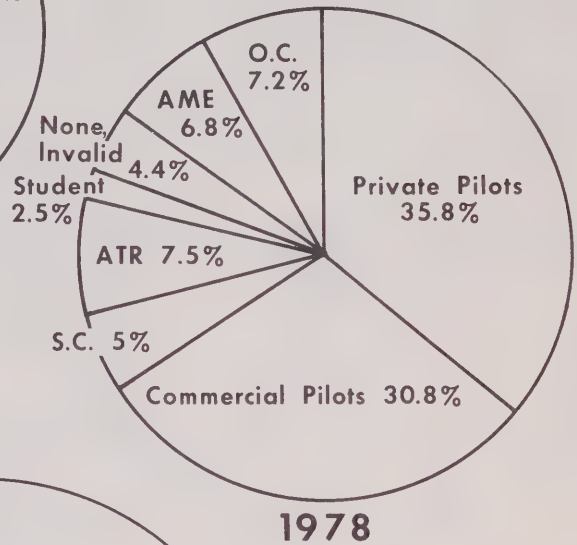
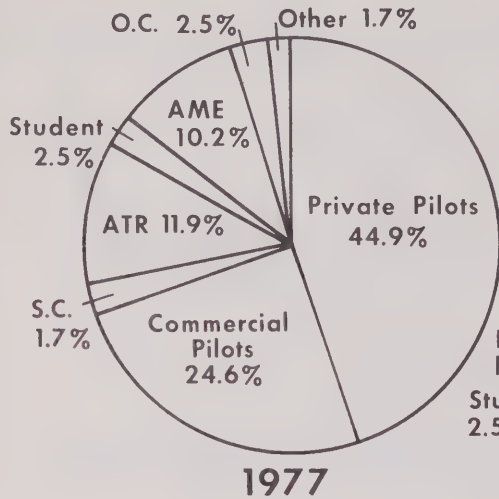
GRAPH N

REGIONAL TOTALS OF SUSPENSIONS



GRAPH O

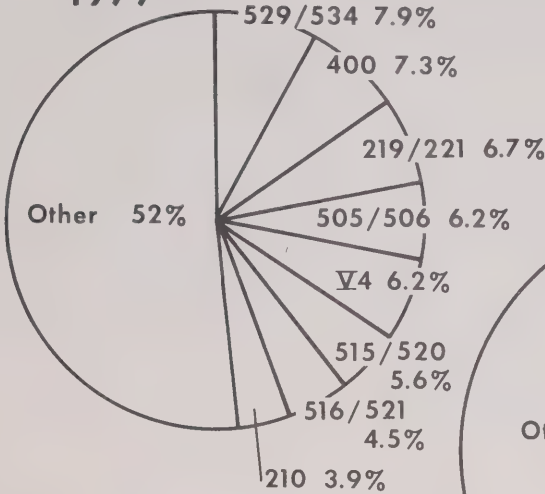
WARNINGS BY LICENCE CATEGORY



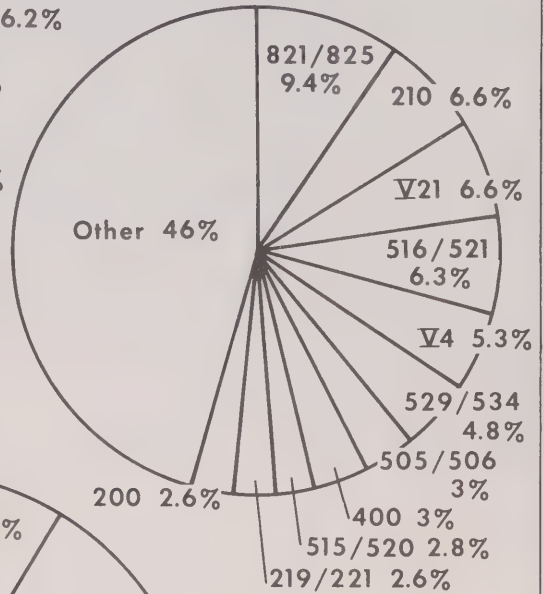
GRAPH P

REGULATIONS MOST FREQUENTLY CITED IN WARNINGS

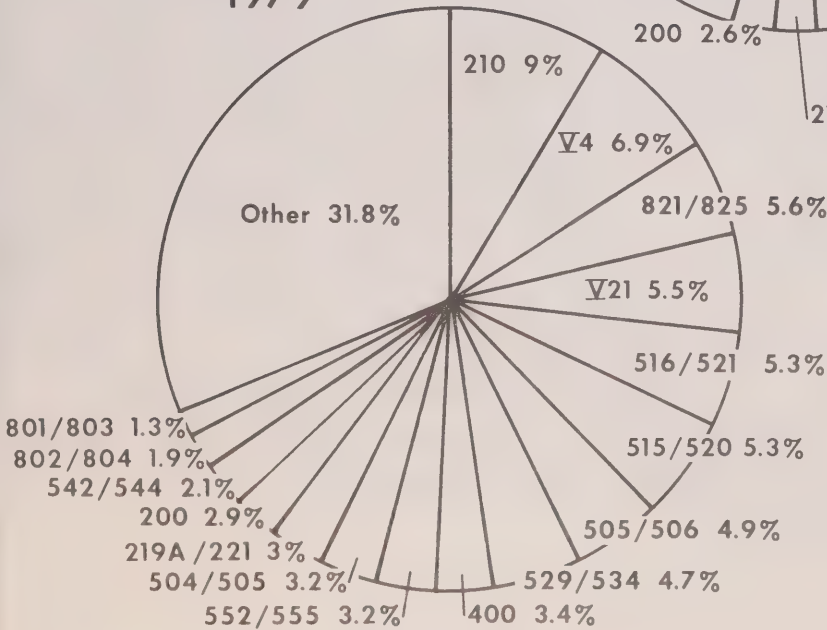
1977



1978

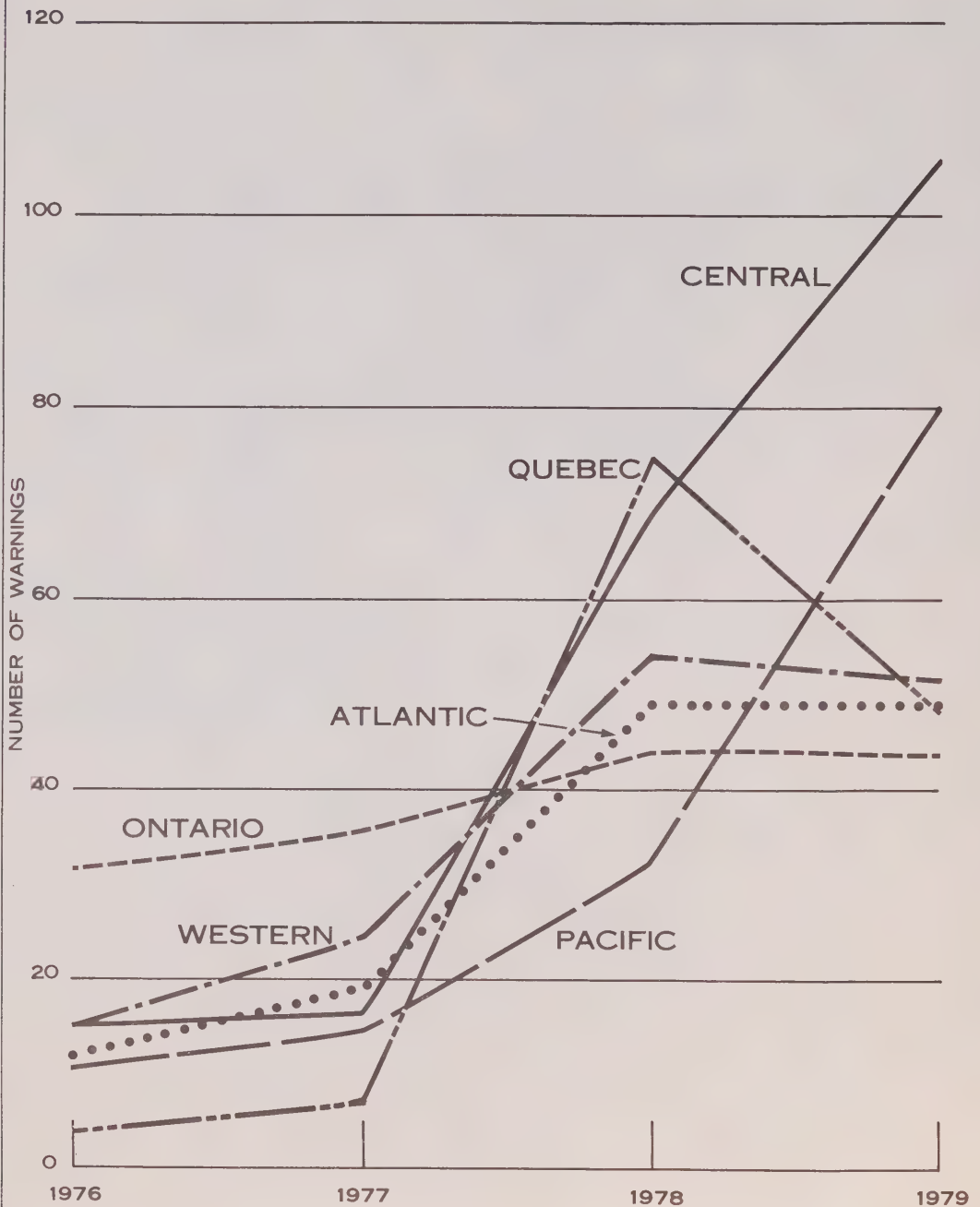


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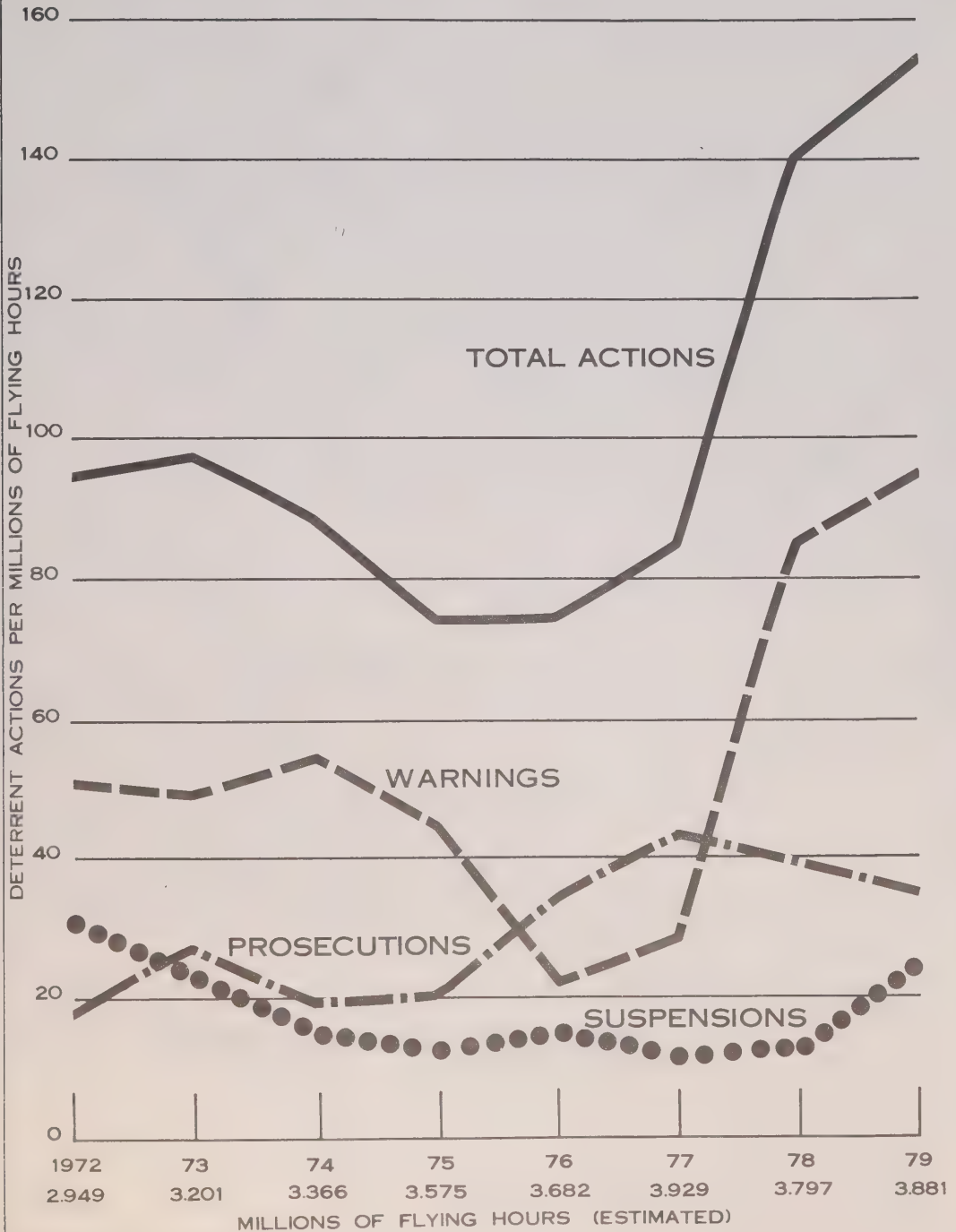
GRAPH Q

WARNINGS BY REGION



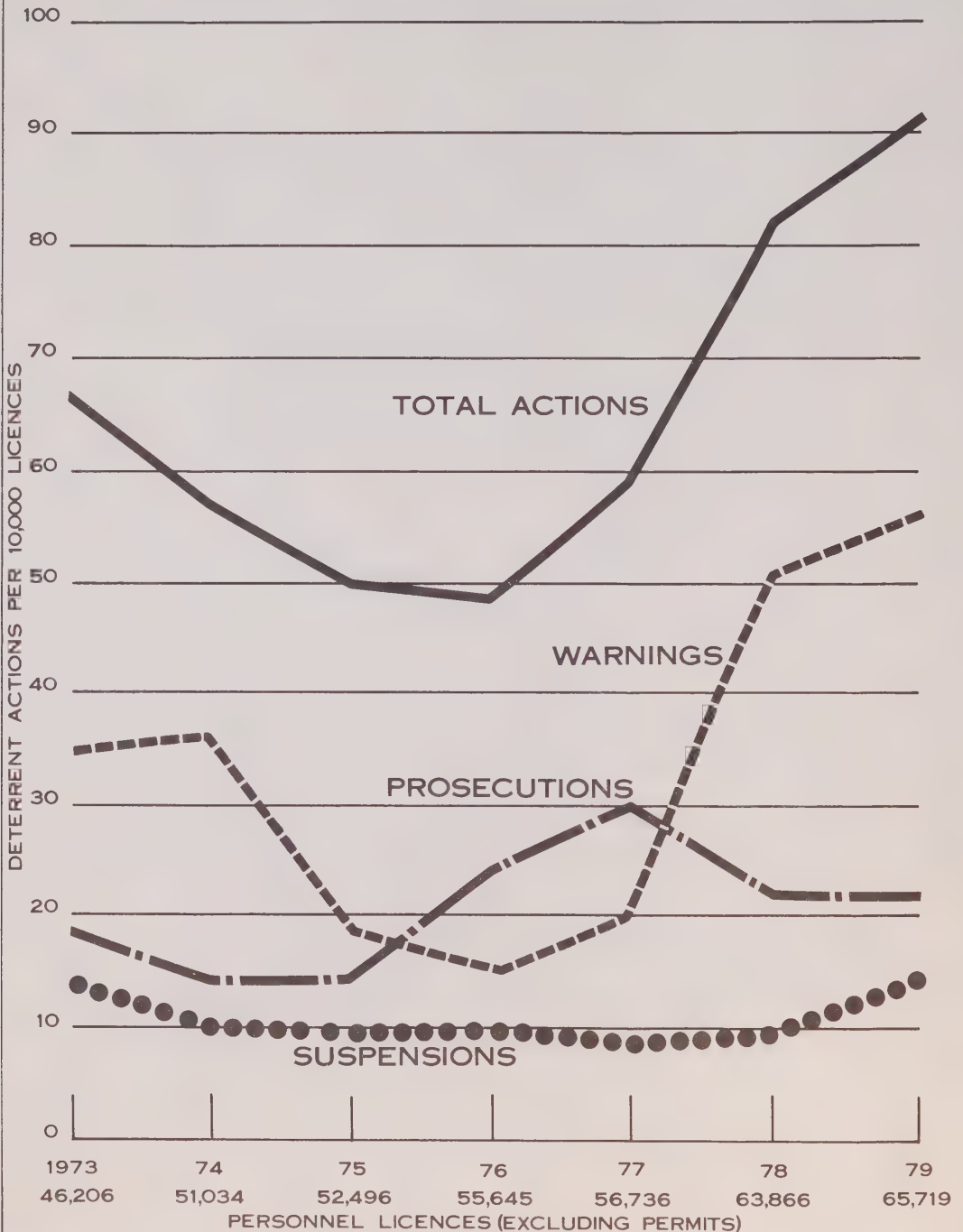
GRAPH R

DETERRENT ACTIONS RELATED TO FLYING HOURS



GRAPH S

DETERRENT ACTIONS RELATED TO NUMBERS OF PERSONNEL LICENCES



COMMENT ON STATISTICS

The overwhelming evidence before the Commission was to the effect that deterrent action is minimal in relation to the violations disclosed. Thus, the enforcement statistics above set forth must be viewed with caution. In that respect, the testimony of Mr. Ned C. Carnie, a former Central Region Enforcement specialist, to whom reference has been made, is worthy of note when he stated:

"Enforcement statistics don't mean too much in enforcement really, although I know it is the current thing to rely on them. We don't know what we are missing, we only know what we have got, and I suggest we are only just scratching the surface on violations."

It is to be observed that although deterrent action has increased in the latter years, there is more resort to administrative sanction and less to judicial proceedings. This is probably due in part to the complexity and ambiguity of the legislation, and the doubt as to the enforceability of many of the safety rules. In addition, prosecutions do not appear to have been particularly effective. They have been lengthy and time-consuming, and in those cases where convictions have been registered, the penalties have been minimal.

The average fine nationally in 1978 for violations of the Air Regulations was \$165.00, and of the Air Navigation Orders \$178.00.

It is also of some significance that the deterrent action most frequently taken is that of a Warning Letter. As will appear subsequently, Warning Letters for the most part have not proved to be an effective deterrent.

The most significant increase in enforcement action in 1979 was in the Pacific Region which coincided with the appointment of an additional enforcement specialist for that region, which suggests the advisability of additional enforcement specialists in the other regions.

Deterrent action in the Province of Quebec actually decreased notwithstanding the high accident rate in that region.

Although the Commission heard of numerous complaints with respect to the overloading of aircraft, Table 4, which details the regulations most frequently cited in deterrent action, makes no reference to any such action having been taken with respect to overloading aircraft.

Having regard to the small number of enforcement specialists available and the deficiencies in the enforcement process, the statistics appear impressive. However, all the evidence established that the present enforcement process is not an effective deterrent and can only become so by the introduction of many changes which will be the subject matter of my recommendations.

PART V

THE NORTHERN ONTARIO AVIATION SAFETY STUDY REPORT

Prior to the establishment of this Commission, the most extensive survey of the enforcement process in Canada was that which was undertaken in 1977 by Mr. R. W. Slaughter, a Civil Aviation Inspector from the Central Region, and Mr. A. G. Carswell, a Civil Aviation Inspector from the Ontario Region. The study was initiated by reason of the growing concern about the state of aviation safety in Northern Ontario, and Messrs. Slaughter and Carswell were assigned to conduct a study of aviation safety in that area. Although a brief reference to the study was made in Volume 1 of this Report, it is worthy of special consideration.

The manner in which the study was carried out appears from the following portions of their report which was delivered on September 30, 1977:

"GEOGRAPHIC AREA

Most of the controversy and concern which precipitated this study was generated within Northwest Ontario, which is within Central Region's jurisdictional boundaries. However, because the types of aviation activities, geographic terrain, weather, and problems were common to both Northwest and Northeast Ontario, and because there is considerable air traffic crossing the regional boundaries, it was decided to view the two regions as one geographic area. Special mention is made of Northwest Ontario in this report because this area was considered to warrant particular analysis.

For the purpose of this Study, Northern Ontario was defined as being that area of the Province of Ontario north of the 46th parallel of latitude. Northwest and Northeast Ontario are defined as being those regions west and east of the 88th meridian of longitude respectively. Annex B and C attached depict the two regions of Northern Ontario.

AVIATION SAFETY STUDY ACTIVITIES

During the initial stages of the study, aircraft accident records and statistics were obtained from the Aviation Safety Bureau in Ottawa, and analyzed in an attempt to identify problem areas which may be reflected in aircraft accident histories. Simultaneously, the CCAS conducted fact finding interviews with various individuals who had first hand knowledge about the state of aviation in the Area. Included in the persons interviewed were Central Region Civil Aviation and Technical inspectors, and Mr. Wm. Ranney, Manager, Remote Northern Transportation for the Ontario Ministry of

Transportation and Communications. During this same period the OCAS obtained similar information from Divisions within Ontario Region.

Based on the results of these analyses and interviews, general areas of concern were identified and pursued in more depth through a survey tour of the area.

SURVEY TOUR

Two field trips into Northern Ontario were carried out between August 15th and 28th. The first, into Northwestern Ontario, originated in Winnipeg, and the second, into Northeastern Ontario originated in Toronto. The purpose of the trips was to examine the status of commercial aviation in Northern Ontario. It was originally intended to travel into the Region incognito, so as not to attract any attention. However the acting DGCA, Mr. H. R. Finley directed that we were to be visible in the conduct of the survey. As a result, the survey was conducted on a 'low profile' basis. Persons were advised of our identity only after we had utilized the Aviation services available. In this manner we were able to view firsthand the normal operation of aircraft in the Region. The 'team' CCAS and OCAS, wore bush clothing and attracted no particular interest. In the North, it seems, most representatives of mining, lumber, or other interests do not normally discuss their business. It was noted that when pilots were advised of our identities at the end of a flight, they seemed content to be discreet and not broadcast our presence either, because they were fully in accord with the thrust and intent of our investigation, or because they had violated regulations themselves during the flight, and did not wish to further complicate their positions. In any case, it was apparent that most pilots and air carriers with whom we flew were unaware of our identities before the flight.

In an irregular pattern across Northern Ontario, the 'team' covered approximately 1800 miles in 9 days, and flew with 13 air carriers. During the tour the 'team' interviewed or talked to over 20 pilots, 7 nurses, 6 doctors, an air carrier owner and operator, a lawyer, a transportation manager for the Department of Health and Welfare, a stewardess, an aircraft engineer, 2 Department of Indian and Northern Affairs personnel, and other persons with useful information about aviation in Northern Ontario. All interviewees were told that the purpose of the interviews was to gain information on actual conditions with respect to Aviation Safety in Northern Ontario, that none of the information received would be used for enforcement purposes, and that their statements would not be released to the public. Some of those interviewed, however, indicated a willingness for their information to be used in any way, and seemed to be willing to testify in Court, or to speak publicly on these matters. Over 10 hours of interviews were taped, and notes made.

During flights with various commercial air carriers, the survey team was:

- (a) struck by lightning in an ST 27 while flying through the centre of a thunderstorm cell which probably could have been avoided;
- (b) flown in aircraft with no serviceable compass;

- (c) flown by a pilot with no watch or timepiece, in an aircraft which did not have a serviceable clock;
- (d) offered, by a licensed operator, an illegal charter in a private aircraft with a private pilot;
- (e) flown, on a charter, less than 100 feet above tree tops, below hills, and in cloud, with a pilot who had only one years experience as a commercial pilot;
- (f) in aircraft without adequate life preservers or emergency supplies, or where the life preservers were inaccessible in an emergency situation;
- (g) in numerous aircraft on which there were no aircraft documents carried as required by the air regulations.

Also, the team flew with some safe, competent pilots, whose aircraft conditions and flying techniques reflected their companies' high standards. Unfortunately, these operators appeared to be more the exception than the rule.

A detailed chronological report of the survey tour is attached as Annex D to this report.

The survey tour, conducted in the low profile manner as it was, proved to be the most valuable method of obtaining a factual picture of the aviation situation in Northern Ontario. Clearly, a nine day tour by two investigators cannot be expected to uncover any more than the 'tip of the iceberg'. The 'iceberg' however, appears to be large."

Under the heading, General Survey Findings, the report made the following observations:

"Commercial vs. Private Operator Considerations

As has been shown above, commercial operations in Northern Ontario account for the largest portion of aircraft accidents - 50.5%. These operations directly involve public safety and public resources, and have generated public concern regarding safety whereas private operations affect primarily private resources and are much less structured and regulated in their conduct. Therefore, this study will dwell primarily on commercial operations.

COMMERCIAL AIR OPERATIONS - MANAGEMENT FACTOR

Management Priorities

Economics more than any other factor dictates management priorities. For example, if the operation is making money, and is financially secure, management interest may be directed towards expansion, sales and marketing, equipment conditions or crew training, etc. However, if the financial

considerations are reversed, management priorities revert to cost reductions and corner-cutting in attempts to make existing resources stretch as far as possible and return as much revenue as possible. Competition between carriers becomes very keen, to the point of being cut-throat. In conditions such as this, aircraft maintenance may be reduced and, in many reported instances, simply not done; pilots are intimidated into making as many flights as physically possible, aircraft overloading is routine, and pilots are pushed, directly or indirectly to fly in unsafe weather conditions. Other violations of safe operating procedures and basic regulations appear to have become normal. Numerous examples of these management pressures can be found through the Annexed interviews.

In Northern Ontario, many of the commercial operations are heavily financed, operating costs are high and revenue is competitive. As a result, the adverse management influence to cut corners seems to prevail throughout the area.

It is interesting to note that some operators, such as Barney Lamm, owner of OCA, O. J. Weiben, owner of Superior Airways, and a few others, provide much of the financial backing for more than one air carrier. For example, Barney Lamm has financial interest in Pat Air, and the former Hooker Airways, and O. J. Weiben also has financial interest in Severn Enterprises. As a result, the management of those operations is subjected to constant pressure to cut costs from financial backers, some of whom are familiar with airline operations and cost-cutting manoeuvres. It is noteworthy that the influence of management to 'double charge' for many trips, and other unethical operating practices, is pervading the employee ranks as being the acceptable, if not the only way to operate.

PILOT EXPERIENCE LEVEL AND PROFICIENCY

In attempts to minimize operating costs, some managers hire new, relatively inexperienced commercial pilots who can be employed at minimum wages. At present, numerous low-time pilots are available and willing to work long hours under less-than-ideal circumstances in order to 'build time', regardless of wages. For these pilots the accepted levels of pay are found to be approximately \$500.00 base pay, plus 5 cents a mile for smaller single engine aircraft, and 8 or 9 cents a mile for larger single engine or small twin engine aircraft. As a requirement for the 'Base Pay' pilots are normally expected to work at the base loading aircraft or other such chores when not actually flying. As a result, working days are long and there are very few holidays provided. On days off, many pilots are expected to hold 'stand-by' for medical evacuation flights.

Further, it was stated by many persons that Management would utilize pilots who were not qualified on type as co-pilots for larger aircraft, such as the DC3 if qualified pilots were not available.

Two former pilots for Pat Air, who are presently driving dump trucks in Sioux Lookout, indicated that they make more money for less hours driving trucks than they did as active commercial pilots.

In spite of these conditions, it has been stated by many pilots, that for every flying job, there are 'three guys waiting to take your place.'

Though not documented, the survey team noted the number of young, relatively inexperienced pilots operating in Northern Ontario who had migrated there from other regions - particularly the Vancouver area. This finding led to speculation that low time commercial pilots could find work in Northern Ontario more easily than in other Regions.

PILOT TURNOVER

There appears to be a large turnover of pilots in the region, possibly due to the availability of replacements and the insecurity of the position. Pilots who complain about operating conditions or unsafe practices soon find themselves 'laid-off' or fired. As a result, in order to keep their jobs, pilots will go along with conditions as they exist until they either have an accident, (which it has been noted, almost always results in the pilot being fired), they are otherwise laid-off, or they find work elsewhere. At any rate, overt or covert management pressure seems to exist to force pilots to conform to poor operating practices.

Chief pilots are not exempt from the pressures either. It is relatively easy to have a pilot appointed Chief Pilot, with Transport Canada approval, so they are easily replaced. In some cases the Chief Pilot has been appointed in name only, and exercises no authority. He does, however, come in handy as a scapegoat. In one case a Chief Pilot, although appointed to fulfill the requirements of ANO VII, 3, has only been used as a line pilot. In this case, other pilots in the company were not even aware that he had been appointed Chief Pilot. Also, he was not paid for the position.

Generally speaking, the pilots are expected to operate regardless of regulatory restrictions. Some pilots expressed the opinion that the regulations were something one learned in training but as they were not followed in practice, were soon forgotten.

WEATHER OPERATIONS

Flying in weather and cloud is considered routine operations in the North. During the survey tour, the authors, on one charter flight, were flown uncontrolled IFR, albeit in uncontrolled airspace, by a pilot who was operating on a VFR, Class 4 licence. The pilot was IFR qualified and the aircraft, an Aztec, had sufficient flight instrumentation. When asked about the reason for flying in cloud when he could easily and safely have remained VFR, the pilot stated that it was common practice amongst pilots because in many cases they feel safer in cloud, than remaining VFR with all the other smaller aircraft. He stated that most pilots, if they have the qualifications and equipment would much prefer to be in cloud at a safe altitude than attempting to remain VFR 'clear of cloud' which could mean tree top level (or below). Also, even if the pilot had the required '1 mile' flight visibility in a small twin engine aircraft which cruises at about 180 mph., there is little or no room for avoidance manoeuvres in the event an obstruction is sighted. Ergo, they fly in cloud.

The VFR only pilot is not quite as fortunate. He is not equipped for cloud flying and must remain in visual contact with the ground. However, this is not always the case as was experienced by the authors during the aborted flight on a Pat Air C185 from Pickle Lake to Thunder Bay. The pilot intentionally flew through some smaller cloud masses, then attempted to remain VFR under cloud in extremely poor weather conditions. Eventually he was forced to turn around and return.

The pilot stated that others would have continued through 'half on instruments, half visual' but because he had less than one year experience in commercial flying, he couldn't make it. What disturbed the authors even more than the episode, which was extremely dangerous, was that the pilot claimed later that he had known we were MOT inspectors, yet he did not attempt to avoid violating regulations.

Flying in unsafe weather conditions or pressuring of pilots to fly in bad weather is common, and is documented throughout the interview transcripts.

OVERLOADING OF AIRCRAFT

Overloading is almost universally accepted as standard procedure in Northern Ontario bush operations. In many operations even if scales are available they are not used and pilots are expected to take as much load as possible. In some cases the measure of how much can be carried appears to be whether or not the aircraft will take off in the space available. If it will not, something is unloaded. This procedure continues until the aircraft will become airborne. Statements to the effect that overloading is prevalent and accepted can be found throughout the interview transcripts.

It is considered that governmental departments' tendering practices to obtain the cheapest cost to move material by air contribute to aircraft overloading and competition between air carriers. Annex V refers.

COMPETITION

Competition between airlines is very keen and to the point of being antagonistic. Operators are not only competitive in their bidding for contracts, but they also attempt to make operations as difficult as possible for other companies, by small, petty, and sometimes unsafe measures, ie: two skeds, 'racing' to pick up passengers, refusing to carry urgent spares. This competition factor is also proving detrimental to the contracting customers, as the Department of Indian and Northern Affairs people testified.

AIRCRAFT MAINTENANCE

Closely aligned with management influence is poor aircraft maintenance. Throughout the attached transcripts, and reference letters are reports of aircraft unserviceabilities not being either recorded or repaired; aircraft inspections being signed out without the aircraft being, in fact, inspected; drunkenness amongst engineers; not recording aircraft flying time, in order to extend the inspection times; unqualified persons working on aircraft with

little or no supervision; and many other unsafe practices or flagrant breaches of regulations. Three interviewees refer to about 200 hours having been flown on Pat Air aircraft without a recorded entry in the journey log.

In the long run better maintenance practices would likely lead to fewer operating costs, but short sighted management and cost-cutting pressures often lead to inadequate maintenance.

The fact that maintenance or material failure accident causes are not more prevalent may be explained by the pilots accommodating these inadequacies as a matter of course. It may also be explained by the suggestion from one accident investigation superintendent that all accidents are not necessarily reported. An organization that violates all the other regulations can hardly be expected to comply with the regulations requiring all accidents to be reported.

It appears that the reason for unsatisfactory maintenance practices is primarily financial. It is rationalized that if actual aircraft hours are not recorded the time between maintenance inspection will be increased, and the number of inspections with associated cost, proportionately reduced. Also, if aircraft operate with equipment unserviceabilities, the revenue production remains with an associated reduction in repair costs. It is apparent the financial motive exists to violate regulations and good maintenance practice.

It has been suggested that frustration among engineers for being forced or coerced to propagate these poor standards has contributed to 'drinking' on the job, and the resulting degradation of workmanship.

It was reported that much of the aircraft maintenance work is done by apprentices, or unqualified mechanics without adequate supervision or control. Presumably unqualified inexperienced mechanics are more available and can be obtained at considerably less cost than licenced AME's.

At best it is difficult for Transport Canada personnel to regulate and enforce maintenance standards when licenced AME's are spread throughout so many small locations in a large geographic area. Also, one of the problems that exists is that AME's have difficulty in obtaining all Airworthiness Directives and NAMEOS. For small, one-man operations in remote locations maintaining files and records of these directives is also difficult.

It is considered that a suitable remedy for the situation would be to have Approved Maintenance Facilities established at selected locations throughout Northern Ontario. These locations could be regularly monitored and inspected by Transport Canada, and would provide aircraft maintenance of an established standard. Operators should employ their own engineer(s) particularly for 'first-line' or minor maintenance. Licenced Approved Maintenance shops would be available for inspections and major rectifications. These shops would provide some level of continuity by advising operators of requirements and insisting that all work be done to acceptable standards. These facilities would also provide locations at which apprentice mechanics could receive training and experience under supervision and control.

It should be noted that section 408(a) of the Air Regulations preclude pilots from drinking alcoholic beverages when flying, but no similar restriction exists for AME's. There is no regulation under the aeronautics act prohibiting an AME from drinking, or being under the influence of alcohol while working on aircraft or signing them out. This appears to be a significant omission in the Air Regulations.

PUBLIC CONCERN

The aviation safety situation has generated considerable public concern, particularly in Northwest Ontario. This concern is not just a creation of the media or of emotionally involved persons, but it is a real concern to many of the people who must use aviation in their jobs and whose only means of transportation is the local air carriers. Dr. Goldthorpe, Director of the Zone Hospital, Department of Health and Welfare, at Sioux Lookout, has very effectively stated the problem and his concerns. It should be noted that Dr. Goldthorpe had expressed the same concerns long before the news controversy erupted. Dr. Harry Bain of the University of Toronto raised observations as long ago as 1973. Annex GG includes correspondence on the subject. Doctors, nurses and others who utilize aviation services have been exposed to many unsafe situations and hold strong opinions on the requirement for improved aviation safety.

TRANSPORT CANADA - REGULATORY PROCEDURES

In consideration of the above, it was determined that the only effective method of establishing and maintaining an acceptable level of safety and procedural adherence to regulations is to have strong surveillance and enforcement action. However, Transport Canada's regulatory and enforcement function was found to be inadequate and ineffective.

Throughout the aviation community, particularly in Northwest Ontario, Transport Canada regulatory and enforcement attempts are viewed with considerable contempt and disdain as being a 'Joke'. Almost without exception, all persons interviewed shared this opinion. Aviation in some areas of Northwest Ontario appeared to be in a state of anarchy.

Transport Canada's regulatory and enforcement operation is perceived to come to be influenced by political pressure. Examples were alleged where a call by an offending operator to a 'somebody' in Ottawa resulted in the cessation of enforcement action by Transport Canada. An example cited more than once is Mr. O. J. Weiben's (Superior Airways), success in having threats to suspend his Operating Certificate removed or withdrawn. Persons such as Mr. Weiben are perceived in the Aviation community as being more influential than the Transport Canada officials. As a result, his views, opinions and operating procedures appear to be reinforced, increasing the management influence factor previously discussed, and decreasing respect for the Air Regulations. This seriously weakens Transport Canada's credibility as a regulatory body. It has been noted that this is not just a perception of the public, but can be found as a negative attitude which has affected some Aviation Inspectors at the Regional level. The impression that regulations

cannot be enforced is held most strongly by those inspectors with the least knowledge of the regulations. Related to this attitude is the fact that no training program in these matters exists or ever has existed. Inspectors, it seems, are expected to train themselves in inspection and enforcement procedures.

INSPECTION PROCEDURES

At present, operators are given prior notification of forthcoming Base Inspections. This naive approach gives operators an opportunity to 'clean house', make artificial entries in aircraft logs and other records, and remove any aircraft which may be of questionable airworthiness status. Repeated statements from air carrier personnel and even persons outside the industry, relate stories of aircraft being sent away on the day of the inspection so that they are not available for examination. Clearly the effectiveness of these inspections is negligible, and Transport Canada's reputation suffers.

It is interesting to note that notwithstanding the advance notice, numerous deficiencies are generally uncovered during Base Inspections. This fact suggests that operators do not have any great concern about penalties for violations.

TRANSPORT CANADA PRESENCE

There is no permanent Transport Canada regulatory presence in Northern Ontario. Surveillance and enforcement trips into the region are conducted occasionally but are reportedly ineffective, despite some violations being found. The 'moccasin telegraph' rapidly forewarns operators of these visits as soon as a Transport Canada aircraft is heard or spotted in the region.

In order for Transport Canada to maintain an adequate and visible presence in Northern Ontario, it is suggested that regional sub-offices be established in both Northwestern and Northeastern Ontario. Each sub-office should be responsible to the respective RCCA, and should be staffed by at least two Inspectors, an operational Civil Aviation Inspector and a Technical Inspector, plus appropriate clerical support. These inspectors should be qualified in inspection and enforcement procedures, and be provided with the necessary resources to travel inconspicuously and conduct inspections on a continuous basis. Theirs would be a 'preventive enforcement' function insofar as their continuous presence and unexpected appearances would stimulate regulatory compliance under fear of exposure and penalty. To be effective these inspectors should be free of all other responsibilities such as monitoring licencing examinations, routine check rides, etc.

The 'resident inspectors' would not replace in-depth base inspections by regional headquarters staff, but rather they would fulfill the surveillance, spot-check function and training of local police forces, thus relieving regional staff from this responsibility.

INSPECTOR QUALIFICATIONS

The quality of inspections and enforcement activities is dependent upon the inspector's knowledge about his function and his qualifications to fulfill his mandate. Throughout this study, there was repeated evidence of inadequate inspection techniques, lack of inspection continuity between inspectors, and differences in priorities and emphasis between inspectors and between regions. Reports of these deficiencies were made by an operator in Annex Q and by other interviewees. This point was also raised by some regional inspectors during interviews. Repeatedly, inspectors complained of not having adequate knowledge of their assigned role when commencing duties, and being forced to learn through on-the-job training and trial-and-error techniques. The result is that the regulatory inspection and enforcement function is often completed in a manner with which even the inspectors concerned feel dissatisfied.

Clearly, there is a glaring need for the incorporation of inspector training courses to fulfill both initial training requirements for new inspectors and for career development purposes.

New inspectors should receive intensive initial training to make them knowledgeable about the Department as a whole and its function and roles in Civil Aviation; the legal basis and status of the air regulations and other orders and directives; and their delegated authority and responsibility as Civil Aviation Inspectors.

A subsequent course should be provided to make inspectors intimately familiar with the requirements of the specific division in which they will be operating. The appropriate course should also be given to inspectors who transfer from one division to another. These courses should be conducted at Headquarters level to ensure standardization among regions.

The introduction of training courses for inspectors would contribute significantly to improving standards, continuity and confidence among inspectors, standardize procedures between regions, and provide more equitable treatment to the aviation industry."
(Emphasis added.)

The report was a very lengthy and detailed one which included documentary evidence and transcripts of taped interviews in support of its conclusions. The report concluded:

"...Some air carriers were found to be conducting safe, competent operations, but unfortunately these were few. The general trend, as displayed by the majority of commercial operations, reflected an unacceptably low level of aviation safety."
(Emphasis added.)

The report included the following findings and recommendations:

"FINDINGS

1. Aviation safety in Northern Ontario, and particularly Northwestern Ontario, is below an acceptable level. Compliance with The Air Regulations is unsatisfactory.
2. Overloading, falsification of log book entries, illegal and unsafe maintenance practices, flying below legal limits in bad weather, flying VFR with insufficient flight instruments, and other illegal and dangerous practices too numerous to list here are so common as to be accepted as normal practice by many pilots and operators.
3. Operator 'pressure' on pilots and employees is often a major factor in unsafe and illegal practices. Economic considerations appear to be more important to some operators than are safety considerations, and often override them.
4. Insurance settlements may unintentionally contribute to unsafe or illegal commercial air operations.
5. Some governmental departments may unknowingly be contributing to unsafe practices by their tendering and contract procedures.
6. Operators often compromise safety by hiring inexperienced pilots. Many commercial 'bush' pilots in Northern Ontario are on their first job and are very inexperienced.
7. Pilots are expected to fly and work hours greatly in excess of established guidelines and remuneration is structured to encourage this practice.
8. Operators are required by law to have training programs for pilots; however, few of them do.
9. Maintenance engineers frequently contribute to unsafe, illegal operations by signing maintenance logs without the required work having been done to the aircraft. Also, in some cases, primitive or inadequate working conditions contribute to unsafe maintenance procedures and practices.
10. Aircraft maintenance supervisory practices are inadequate. Licensed engineers often have more apprentices working for them than they can effectively supervise.
11. There are no air regulations concerning the use of alcohol by air carrier employees other than aircrew. Drunkenness among air carrier employees, particularly maintenance personnel, is often a problem.

12. The Air Regulations, with some noted exceptions, are considered adequate and enforceable in the courts. However, enforcement of The Air Regulations in Northern Ontario is inadequate, and therefore respect for The Aeronautics Act with its associated regulations and orders has been seriously eroded.
13. Transport Canada's inspection procedures and practices have not been effective. Operators know in advance about forthcoming inspections.
14. Within Transport Canada there is a lack of aggressiveness in pursuing the enforcement function. Civil Aviation and Technical Inspectors are not sufficiently familiar with aviation law or enforcement procedures.
15. There is insufficient delegation of regulatory authority for adequate or timely reaction to field situations, particularly with respect to Operating Certificate suspensions.
16. Surveillance, inspection and enforcement resources are inadequate to effectively cover the large Northern Ontario area. There is a strong requirement for 'resident' inspectors in both Northeastern and Northwestern Ontario to continually monitor and control the routine air carrier operations.
17. Aircraft accident statistics are not current and not amenable to accurate and timely trend analysis. The initial aircraft accident statistical comparisons, which were presented and publically promulgated, were found to be inaccurate and not representative of the actual level of aviation safety in Northwestern Ontario.
18. There has been no active, continuing Aviation Safety/Aircraft Accident Prevention Program being conducted within Northeastern or Northwestern Ontario by Transport Canada to encourage and assist aircraft operators, pilots or engineers to develop safe, prevention-oriented aviation practices.

RECOMMENDATIONS

1. That the frequency and depth of Transport Canada's regulatory inspections and surveillance activities be increased.
2. That inspectors from all Civil Aviation divisions be trained and qualified to inspect air carriers for compliance with basic requirements.
3. That the Regional Controllers be delegated powers under Sections 813, 814, 703 and 407 of The Air Regulations to cancel or suspend licences, permits and Operating Certificates when appropriate and necessary.
4. That 'resident' inspectors be established at regional sub-offices in both Northwestern and Northeastern Ontario.

5. That ANO 7-3 be amended to require higher experience requirements for commercial pilots who carry passengers.
6. That operators be required to comply with the training requirements as specified in ANO 7-2 and 7-3.
7. That inspection of aircraft maintenance standards by Aeronautical Engineering Divisions be stepped up and that firm enforcement action be taken against violators. In this regard, violations of airworthiness standards should be recognized and treated as violations and not 'discrepancies'.
8. That approved maintenance facilities be established at various locations throughout Northern Ontario and inspected regularly.
9. That aircraft accident statistics be updated to make them more timely, meaningful and amenable to ready and accurate trend analysis.
10. That the VFR minimas specified in ANO V, No. 3, para 4(b) be raised in recognition of increased aircraft speeds, air traffic and ground obstructions.
11. That maximum flying and duty times for aircrew be incorporated in the ANO's and enforced.
12. That ANO II, No. 2, Section 5(i) be changed to require the provision of a seat and safety harness for each passenger carried.
13. That Section 408A of The Air Regulations be extended to cover alcohol use by other air carrier employees as well as aircrew.
14. That an Aviation Safety/Aircraft Accident Prevention Program be designed to fulfill the specific requirements of both Northwestern and Northeastern Ontario and conducted on an active, continuing basis, and that Regional Aviation Safety staffs be increased by one person each to effectively accommodate this program.
15. That a promotional program be introduced to enhance and reinforce the image of the regulatory enforcement function as an integral and necessary part of Aviation Safety. This program should be directed at Transport Canada personnel, the aviation community and the public at large."
(Emphasis added.)

The report was forwarded to Ottawa with the full support of the Administrators of the Central Region and of the Ontario Region as is evidenced by the following memorandum, dated October 7, 1977, from Mr. D. A. Lane, Administrator, Central Region, to the Administrator of CATA.

"Enclosed herewith are two copies of the subject Aviation Safety Study Report. The ORA and I have reviewed this Report and consider it to be comprehensive in content and a realistic assessment of the actual condition of aviation safety in Northern Ontario. The recommendations for improvement are considered valid and should be implemented with haste. However, these changes, though they be timely and necessary measures, will not provide a panacea for all Civil Aviation problems. It is my opinion that the entire regulatory control system and the atmosphere for enforcement, both within and without the Department, should be continually reviewed and updated to accommodate changing conditions."

The question of releasing this Report to the public must be addressed. It is our contention that there are basically three avenues that should be considered:

- A. Release the complete report, less the annexes.
- B. Release only the Executive Summary. OR
- C. Do not release the Report but public reaction would call for a full-scale inquiry.

Selection of the final course of action should take into consideration the possible effect to the Department's public image, and should not lose sight of our primary objective, which is to apply positive, timely corrective action to ensure the safety of the travelling public.

With regard to the annexes, including the transcribed interviews, this documentation is submitted in support of the Study findings and should not be considered as a part of the formal report. Because much of the information contained therein was given in confidence and may be construed by some as libelous, it is requested that the annexes not be released to the public.

The originators, Mr. Slaughter and Mr. Carswell, will be available at your convenience, should you require them for interview."
(Emphasis added.)

The manner in which headquarters proposed to deal with the report is disclosed by the following memorandum from the Administrator of CATA to the Director General, Civil Aviation, dated October 24, 1977:

"This will confirm our meeting on 24 Oct. where we discussed the report prepared by the Ontario and Central Regions.

It was agreed that the report itself will not be released but will be used as a basis for reporting to the Minister the status of safety of commercial

operations of Class 2, 3 and 4 air carriers in Northern Ontario. The report to the Minister will reflect the views of CATA headquarters that the findings of the safety study do not contain any surprises, and that we have had insufficient resources to follow up the introduction of ANO VII, No. 3. Further, we will present data on the growth of the small air carrier industry and the lack of equivalent growth of our inspection staff, the change in the attitude of society toward enforcement, and the fact that our inspectors can no longer lift licences and must be prepared to go to the courts to achieve enforcement, that the turnover of inspectors and lack of adequate training in enforcement is non-productive, that the inspectors are less keen to undertake the enforcement role today, that the inspectors have really been working to rule ever since the failure of their union to complete the negotiations for the last contract, etc.

On the positive side, we should indicate to the Minister that we will be launching an immediate enforcement campaign with a picked team of personnel from Headquarters and the Ontario and Central Regions, and that we will concentrate on the carriers identified in the safety study, and will be prepared to use show cause procedures concerning operating certificates. We should point out the impact of these actions to the Minister. I believe we should recommend that it would be premature for a public inquiry until such time as our enforcement people have completed their task which will certainly run well into 1978. Also, the question of an inquiry might still arise from the aftermath of the Pickle Lake DC-3 accident because of the action of the pilot's next of kin.

I expect that you will have a draft report ready for discussion by the 4th of November, at which time those of us who met today should meet to review the report."
(Emphasis added.)

In its report to the Minister, headquarters minimized the criticism of itself which was contained in the Northern Ontario Aviation Safety Study Report. In that respect the following question put to Mr. P. E. Arpin by Mr. John Sopinka and Mr. Arpin's reply are significant:

"Q Then I suggest to you that conspicuously absent from this instruction from Mr. McLeish is any reference to the fact that Headquarters was front and centre in being criticized in the report and your instructions were not to include that, not specifically, but you weren't to say anything about the harsh criticism of Headquarters. And those instructions were carried out. . . .

A It wasn't mentioned and it wasn't volunteered at the time."

The report was never made public, but because of its importance to the Province of Ontario, the then Minister of Transport wrote a lengthy letter, dated January 3, 1978, to the Minister of Transportation and Communications of Ontario and included in the letter is the following reference to the Northern Ontario Aviation Safety Study Report:

"Turning specifically to the situation in Northern Ontario which was the subject of a safety study by the safety officers from the Ontario and Central Regions, I should like to make some specific comments. Your request that I consider the need for an inquiry into the safety of aviation operations in Northern Ontario came at a time when the civil aviation regulation inspection staff is overloaded and this was even more critical this year because the staff had already undertaken an area master plan study to determine the adequacy of navigation aids and other facilities. So it was necessary to press into service the recently appointed safety officers whose role is essentially that of accident prevention and who are not trained as civil aviation inspectors. They also were apparently unaware of the progress that the Canadian Air Transportation Administration is making in modernizing the regulation of aviation activity in the sparsely settled areas. My officials now believe that they were given too much scope for individuals with so little civil aviation experience - their experience was military - and as a result, their report while no doubt an accurate commentary of their experiences, cannot be extrapolated into a picture of a deplorable lack of activity on the part of the Canadian Air Transportation Administration. Nevertheless their report was thorough and is a basis for corrective measures which this letter describes.

An immediate action campaign to examine in detail the operations of air carriers identified in the safety report is now underway by a team consisting of staff of the appropriate regional office supported by specialists from the Canadian Air Transportation Administration headquarters. If necessary the carriers in question will be required to show cause why their operating certificate should not be cancelled or otherwise restricted.

Additionally, in each region the planning for an Air Carrier Inspection Division which has been underway for about a year is now being implemented. Additional inspectors are being assigned as follows: Atlantic 1, Quebec 4, Ontario 4, Central 5, Western 2, Pacific 2.

My senior officials have stated that they are confident that the various measures that are in the process of implementation will adequately reinforce the licensing and inspection system of air carriers and it is doubtful that a public inquiry would disclose anything new or helpful. Officials have further concluded that any inquiry should embrace all regions of Canada and not just Northern Ontario, and would involve a significant number of inspectors and supervisory personnel in collecting evidence and appearing as witnesses which would inhibit productivity of the staff and would probably delay several

enforcement actions. In fact, it is quite possible that the inquiry would be denied some of the pertinent evidence because of enforcement actions which are underway.

Accordingly, I have weighed very carefully the evidence that has been placed before me as to whether or not an inquiry should be undertaken, and I am satisfied that the report of the safety officers was sufficiently thorough to provide a basis for full corrective action which is in the process as I have indicated."

(Emphasis added.)

It is to be observed that there is a reference in the letter to the alleged inexperience of Messrs. Slaughter and Carswell. However, an examination of departmental records including the original analysis of the report by headquarters did not disclose any earlier reference to their alleged inexperience.

The Minister appears to have accepted the advice given to him by headquarters that the criticism in the report of the lack of activity on the part of the Canadian Air Transportation Administration was unwarranted. Although I am completely satisfied that the then Minister of Transport for Canada acted in the utmost good faith, it does not appear that he was fully informed as to the contents or the significance of the report.

The headquarters' analysis of the Northern Ontario Aviation Safety Study Report submitted to the Commission concluded as follows:

"The study's conclusion is considered somewhat harsh considering the evidence upon which such a conclusion was arrived at. The regulatory inspection function of Transport Canada was also harshly criticized with very little evidence to support such a conclusion. No mention was made of the level of surveillance that had taken place in Northern Ontario in the previous year nor any attempt made to determine the enforcement action that had taken place during the same period. It does become evident after reading the report that its conclusions are based mainly on unsubstantiated statements, statistics of doubtful value and random sampling of flights with 10 air carriers six of which were found wanting to various degrees. Of the six air carriers which were criticized 3 of them were based in Northwestern Ontario where at the time, 30 air carriers were operating. Of the 'over 20 pilots' which were interviewed, the report documented the interviews of 8 pilots only. Three of the pilots and a stewardess who was also interviewed were or had been in the

employ of a carrier based in Northwestern Ontario which had been the subject of an inquest into the fatal crash of an aeroplane in that area. It is possible that their testimony may have been influenced by recent events." (Emphasis added.)

Following the receipt of the Northern Ontario Aviation Safety Study Report, four air carrier inspectors were added to the staff, and a limited authority to suspend an operating certificate was delegated to the regions. A three-week orientation course for inspectors was introduced.

Although it was stated that vigorous enforcement action would be initiated, the record discloses that no disciplinary action was taken against any of the carriers identified in the Northern Ontario Aviation Safety Study Report. Instead of acting on the basis of the information in the report, the Air Administration embarked upon a subsequent audit. In response to a request from the Commission, the following information was received as to the action taken consequent upon the subsequent audit:

The base inspections in Northwestern Ontario namely: Superior Airways, Bearskin Lake Air Services, Patricia Air Transport Ltd. and Slate Falls Airways Ltd. did divulge deficiencies.

Superior Airways

As a result of an inspection carried out December 13-15, 1977, the attached 'Operational and Maintenance discrepancies' came to light.

Prosecution Action: Inspector J. P. Bailey who was the leader of the inspection team advised the RSAR Central Region of the discrepancies uncovered during the inspection and suggested that charges could be laid. CCAR and A/CCA discussed the matter and concluded that Operating Certificate action should be taken in lieu of prosecution. The perusal of the air carrier's files does not indicate that any action was actually taken.

Slate Falls Airways Ltd.

This carrier was the subject of numerous inspections beginning with a routine inspection on August 29, 1977. The findings are attached in a memorandum from CCA Winnipeg to DLI Ottawa dated October 20, 1977.

A follow-up maintenance facilities inspection was carried out on October 4, 1977. The results are attached in a letter to Slate Falls Airways Ltd. from the RCCA Central Region dated October 12, 1977.

A further inspection took place on November 23-24, 1977 - A Progress Report is attached.

A base audit was carried out between January 30 to February 2, 1978. The results of this audit are attached.

Prosecution Action: Although numerous operational and maintenance deficiencies were brought forth in all these inspections, the carrier's file does not indicate that any legal action or any form of prosecution ever took place.

Bearskin Lake Air Services

This carrier was inspected on February 14-16, 1978. The 'Operational and Maintenance discrepancies' are attached.

Prosecution Action: In the Analysis Summary of the inspection report dated February 21, 1978, mention is made that this carrier had been involved in a number of violations and convictions in the past. However, in this instance a 'show cause' to remove their Operating Certificate was recommended followed by another inspection prior to reinstatement of the Operating Certificate.

In a memorandum from A/RSAC to CCA Central Region dated March 16, 1978, it is mentioned that an in house meeting took place between the A/RSAC, RSAR, Inspector Carnie and Inspector Hunter on February 22, 1978, and with the carrier's personnel on February 24, 1978.

The final decision was that no action would be taken against the carrier provided Transport Canada be given a guarantee by the carrier that he would 'discontinue immediately all infractions of Regulations, all operations not permitted under the terms and conditions of their Operating Certificate and to rectify all existing discrepancies within six days'. No further action was taken.

Patricia Air Transport Ltd.

This carrier was inspected on January 9-13, 1978, and a number of operational and maintenance discrepancies were noted.

Prosecution Action: Prosecution was stayed after the carrier declared bankruptcy.
(Emphasis added.)

Although "an immediate action campaign" was promised, there appears to have been a great deal of activity but no action.

In testifying before the Commission at Thunder Bay, Mr. Slaughter, who was at that time an enforcement specialist in the Central Region, testified that there had been little improvement in the conditions that he found existed in 1977 or in the enforcement process which was the subject of criticism in the Northern Ontario Aviation Safety Study Report. There was still a lack of adequate surveillance and the unsatisfactory method of inspection still prevailed. His evidence was supported by that of Sergeant John Lamb, of the RCMP stationed at Kenora, as well as by many other witnesses who testified as to the state of enforcement in Northern Ontario.

COMMENT

In my opinion the reaction of senior management to the Northern Ontario Aviation Safety Study Report did a great disservice to the cause of aviation safety. The report was a carefully documented study of the conditions which then prevailed and of the lack of enforcement. The findings were for the most part fully supported by the material included in the report. The study was undertaken at great personal risk and with ingenuity and dedication. It is rather strange that the two inspectors selected for the study would subsequently be described as inexperienced by those who had selected them. Having regard to the quality of the report submitted by them, Messrs. Slaughter and Carswell could hardly be said to be either inexperienced or unqualified. They should have been commended rather than criticized for their efforts.

The report was sufficiently documented to warrant immediate enforcement action. Rather than doing so, senior management proceeded to discredit the report and its authors and deflected the criticisms contained in the report of the inadequacy of the enforcement of the Air Regulations in Northern Ontario and of the ineffectiveness of the inspection procedures and practices. The suggestion in the memorandum, dated October 24, 1977, from the Administrator to the Director General, Civil Aviation, reproduced above, that the lack of enforcement was in part because "the inspectors have really been working to rule ever since the failure of their union to complete the negotiations for the last contract" was, in my opinion, completely unwarranted as is evidenced by the testimony of the inspectors themselves who all demonstrated a determination to make enforcement more effective.

The further suggestion in the same memorandum "that the findings of the safety study did not contain any surprises" is somewhat alarming. If the matters disclosed in the report were well known to the senior officials in the Air Administration, the question immediately arises as to why no corrective action had been taken before the completion of the study, or why the study was rejected out of hand. The failure to take any action cannot be attributed to a lack of resources. I rather think that the taking of this posture is further evidence of an endeavour to minimize the report and the adverse criticism of the Air Administration contained in it.

A subsequent internal audit of the study made by Messrs. Slaughter and Carswell was then unnecessarily undertaken and a public inquiry rejected. Although that audit disclosed that there were continued violations, no punitive measures were taken against any of the carriers with respect to the violations identified in the Northern Ontario Aviation Safety Study Report or as disclosed in the subsequent departmental audit. By diminishing the impact of the report, the Air Administration diminished the urgency of the steps required to be taken to remedy the situation and the importance of the recommendations.

The recommendations, which I have set forth above, were thoughtful and constructive and were worthy of far more serious consideration than appears to have been given to them. Only a few of them were implemented. It was only after a full airing of the matters disclosed in the Northern Ontario Aviation Safety Study Report that the Commission was advised that further consideration is now being given to the implementation of some of those recommendations previously unheeded.

During the course of the Inquiry, evidence was received that many of the illegal and dangerous practices set forth in the Northern Ontario Aviation Safety Study Report still persisted in Northern Ontario. The Commission learned of overloading, falsification of logbook entries, flying below legal limits in bad weather, pressure on pilots to push weather limits, pilots working hours greatly in excess of the established guidelines, maintenance engineers signing maintenance logs without the required work having been done, and other unsafe practices.

As I reported in Volume 1, following the hearings of the Commission in Big Trout Lake and Sandy Lake, the pilots of the carriers which service that area took action on their own to eliminate some of the unsafe practices which they admitted had prevailed at the time of the hearings.

The response of the Air Administration to the Northern Ontario Aviation Safety Study Report was a demoralizing one for all the inspectors and could not have helped but bring discredit on the enforcement process in the aviation community.

Subsequently, I will be commenting on some of the recommendations in the study which I think should now be implemented.

PART VI

THE COMMISSION'S FIELD INVESTIGATIONS

In order to obtain firsthand information as to the conditions which prevail with respect to enforcement and some of the other matters to be inquired into, a series of field investigations were carried out by technical advisers assigned to that task by the Commission.

Mr. Russell J. Thatcher, an aircraft maintenance engineer with 35 years' experience and a retired director of Maintenance Quality for Air Canada, carried out a maintenance and inspection investigation in the Pacific, Western, Central, Quebec and Atlantic Regions. Captain C. Robert MacWilliam, an Air Canada pilot of many years' experience, holding a transport category licence with a technical and air safety background, carried out a flight operations investigation in the Pacific, Western, Central and Atlantic Regions, and Captain Pierre Menard, a Quebecair pilot also holding a transport category licence, carried out a similar investigation in the Quebec Region. Mr. Gerald F. Richardson, of Richardson Investigation Services Inc., Windsor, Ontario, conducted a special investigation on aviation safety in Northern Ontario in an effort to update the Northern Ontario Aviation Safety Study Report conducted by Messrs. Carswell and Slaughter in September, 1977.

The consultants developed a program to visit Transport Canada's offices and attended on the premises of various carriers selected by them as a result of their inquiries. An audit type investigative program was developed to ensure a fairly consistent study of the more significant areas. The studies were made in cooperation with Transport Canada officials who assisted them in every way. In maintenance alone, a total of 48 Transport Canada airworthiness inspection personnel were interviewed, either individually or in group discussions. Discussions were also held with airworthiness engineering personnel on such matters as major repairs, service bulletins and airworthiness directives.

Twenty-three carriers and one engine repair shop were audited, and discussions were held with management, chief pilots, pilots, chief engineers, chief inspectors and aircraft maintenance engineers.

Some of the carrier violations and enforcement deficiencies as found by the consultants included the following:

1. Lack of concern for safety among certain carriers;
2. Overdue base checks;
3. Lack of follow-up on carriers who have surrendered their operating certificates to ensure the carriers have in fact ceased operating;
4. A shortage of inspectors;
5. Lack of inspection guidelines and procedures;
6. Lack of pilot training;
7. Inadequate flight watch systems;
8. Overloading;
9. Improper weight and balance calculations;
10. Journey log violations;
11. Management pressure on pilots and pilot fatigue;
12. Insufficient fuel carriage;
13. Lack of proper maintenance;
14. Failure to comply with Airworthiness Directives and Service Bulletins;
15. Absence of pilot training records;
16. IFR flights without proper equipment;
17. Lack or inadequacy of proper manuals;
18. Lack of flight plans;
19. Improper fueling practices;
20. Poor record keeping;
21. Disregard for airworthiness standards;
22. Improper operating procedures;
23. Absence or insufficiency of emergency procedures;
24. Dangerous loading practices.

The reports to the Commission of the studies made by the consultants are voluminous. Many of the matters disclosed in the reports became the subject of public hearings, some of which are detailed in other Parts of this Chapter. It was impossible, however, to hold public hearings with respect to all the matters referred to and all the carriers identified. Thus, many who had been referred to in the reports had no opportunity to be heard, and

it would be inappropriate under such circumstances to make public the findings and conclusions of the consultants with respect to them. Accordingly, I will be submitting to the appropriate officials of the Air Administration, under separate cover, so much of the material that I think might be helpful to them for their consideration.

I am satisfied that apart from the contribution made to the public hearings by the investigations carried out by the consultants to the Commission and the matters thus disclosed, their very visits at the premises of the carriers which were audited had a salutary effect, and I am confident increased the safety awareness of the carriers.

PART VII

A SYNOPSIS OF THE PRINCIPAL CRITICISMS OF THE ENFORCEMENT PROCESS

The Commission heard lengthy evidence and received voluminous briefs from each of the regions, all of which for the most part was uniformly critical of the enforcement process. Although all of it was helpful, it would be quite impossible, and I think unproductive, to make reference to everything that was put before me.

The principal complaints emanated from those within the Air Administration and were often couched in censorious terms. I propose to set forth hereunder a brief reference to some of the evidence and submissions received from those within the Air Administration and from others which are illustrative of the principal complaints made.

QUEBEC REGION

The evidence and submissions received by the Commission during its hearings held in Quebec City were typical of the criticisms of the enforcement process which emanated from senior officials of the Air Administration in each of the regions.

In 1979, in the Quebec Region there were 2,938 aircraft on the Canadian Civil Aircraft Register, 8,301 pilots and 4,417 student pilots. As reported in Volume I of this Report, there were 133 aircraft accidents in Quebec in that year, disclosing one of the highest accident rates of any of the regions. The Canadian Air Transportation Administration employs approximately 2,100 employees in the Quebec Region, but there is only one enforcement specialist.

One of the principal witnesses heard in Quebec City was Mr. Jean Daniel Wagner, the Quebec Regional Superintendent of Air Regulations. The thrust of his evidence was that the enforcement legislation was inadequate and the existing rules and regulations difficult to understand and apply; that there were no safety standards for flying schools and the flying schools were not meeting acceptable safety standards in the Quebec Region; that there was a lack of a proper working relationship with the RCMP; that there was a lack of proper legal assistance and that any attempt to take legal action

against an offender is a lengthy, costly, and discouraging process; and that where the prosecution is successful, the fines imposed are minimal. He shared the opinion of others that the inspectors become disillusioned and are inadequately trained. In short, he concluded that in the Quebec Region there are very few inspections and very little enforcement.

Mr. J. Wilfred Cusson, the Quebec Regional Superintendent of Air Carriers, testified that as a matter of record barely 50% of the required air carrier inspections were carried out. He complained of administrative lethargy in filling vacant posts and of the inability of his section to maintain proper surveillance of commercial helicopter operations and small carrier operations in remote areas.

Mr. Andre Paulin, the Quebec Regional Aviation Safety Officer, who also testified, stated:

"Sometimes, our efforts appear to us to be hindered by arbitrary priorities, budgetary restrictions, and even incomprehensible attitudes of indifference on the part of those responsible in Transport Canada as well as pilots and air carriers. Too often, safety is something to which we pay a lip service to attract clients and to avoid being severely criticized if caught in default."
(+)

Mr. Paulin blamed headquarters for refusing to support the regions in their enforcement role and claimed that enforcement problems were especially flagrant in the fields of drug and alcohol abuse, overloading, faulty maintenance, and carriage of dangerous goods.

Mr. Pierre Rivest also testified at our hearings in Quebec City. Mr. Rivest had been employed within the Air Administration for some fifteen years as an inspector and subsequently a superintendent within the Air Carrier Division. He is a very experienced pilot and the author of two aviation textbooks. He also served for one year on the Aeronautics Task Force, to which reference was previously made, and is presently employed by the Ministry of Transport of the Province of Quebec as Director of Direction du Transport Aerien. In his testimony, he claimed that the major problem with the Canadian Air Transportation Administration was an inclination to be continually satisfied with the situation no matter how serious the problems. His assessment of the enforcement process was stated as follows:

"The work carried out by Headquarter's personnel can be described as follows: low productivity, incompetence and irresponsibility. That represents 80% of what goes on in Ottawa. There are surely some interesting achievements but they never surpass 20% of the total work."
(+)

and he continued as follows:

"It is not surprising that the entire philosophy of Transport Canada as concerns Aviation Safety rests on one single criterion: wait for a scandal or a major accident like the Air Canada accident in Toronto, or the Cranbrook accident, or others. And when that happens, what does Transport Canada do? Justify itself, cover themselves; especially never admit that there was a deficiency or fault on their part.

And the result? The positive work that the regional offices of Transport Canada could carry on in the field of aviation safety is annihilated by inertia, lack of delegation, lack of authority, and the 'face saving' of the entire organization.

I am not the first person to say such things. This has often been said and often been written. But, and I insist, unless there is a catastrophe or scandal, nothing is done: to the public we all appear satisfied, and in private we protect ourselves, we act like the ostrich and hope that no one will come and disturb the sand around us. It is thus easy to understand why top ranking in the field of aviation safety does not interest the higher authorities of Transport Canada and it is also the reason why the fact that we are slipping towards bottom rank has not yet created a stir among our administrators."
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AIRCRAFT OPERATIONS GROUP (AIR OPS)

The civil aviation inspectors are represented for Collective Bargaining purposes by the Aircraft Operations Group.

An impressively researched written brief on enforcement was submitted to the Commission in Halifax on behalf of the Aircraft Operations Group by Inspector David C. Slayter, to whom I have referred earlier. Mr. Slayter commenced his presentation with the following statement:

"The majority of Civil Aviation Inspectors designated to conduct enforcement work have no background in this area and receive absolutely no specialized training by the Department prior to commencing the job. Accordingly, the

results are quite predictable. Inspectors lacking the technical skills of trained investigators learn the job to varying degrees through the 'school of hard knocks'. In the process, many serious infractions either go undetected or are so poorly handled that inappropriate penalties are assessed. In this atmosphere it is much easier for an Enforcement Specialist to deal with most, if not all, cases via the administrative route (warning/suspension) rather than run the risk of public embarrassment during a prosecution. Any detailed analysis of enforcement records will show that in many instances administrative action is taken when insufficient evidence exists or has been acquired to prosecute. Such procedures are a disservice to the Department and constitute unjust treatment of individuals or organizations being investigated. This situation is not going to change until positive steps are taken to recruit Enforcement Specialists who have more than just a pure piloting background and to establish adequate training programs." (Emphasis added.)

In their evaluation of the organizational structure of CATA as regards enforcement, the Aircraft Operations Group discussed in great detail the ongoing problems faced by the regional enforcement specialists. The brief stresses the problems associated with the absence of speciality training, a workload far in excess of what should be expected from one or two individuals, inadequate access to legal counsel, little or no equipment, outdated, poorly written legislation, and "complete indifference by all levels of senior management to the quality of task performed".

Included in that brief is the following additional comment:

"In its present form, much of the legislation is too vague, contradictory and, in many instances, inaccurate. In addition, much of the material that pilots, engineers and controllers use daily for direction and guidance falls into the category of information and not regulation. Of all the areas influencing the effectiveness of the Enforcement Division, there is none more critical than the legislation itself. Our existing aviation law lacks genuine clout. That in itself is unfortunate, but the most pathetic part of it all is to go back through departmental records and find that regional Inspectors have been for years pointing out numerous deficiencies, recommending changes, but with very little real success. Transport Canada has no effective system established for amending its legislation, at least not from a regional standpoint." (Emphasis added.)

Although the above-mentioned brief dealt specifically with regional enforcement in the Atlantic Region, it mirrored concerns which were expressed in all the regions.

Mr. Edward D. Jensen, Chairman of the Aircraft Operations Group and an experienced and highly qualified inspector, submitted an additional, detailed brief on enforcement on behalf of the Air Ops. The following excerpts are germane:

"Throughout the course of this inquiry you have heard testimony about slipshod operations and flagrant breaches of safety rules with little effective enforcement. We have indicated weakness in the Air Regulations and the lack of effective DOT Inspector presence or contact with the Industry. You have also heard from the Slaughter/Carswell report concerning operating conditions, breaches of the Air Regulations and poor airmanship demonstrated by some Northern Ontario operators. In response to these deficiencies you heard testimony to the effect that clandestine surveillance is unfair and may interfere with the gathering of factual evidence. The AOG do not agree with a philosophy that does not allow detailed examination of all evidence.

...

CATA management appears to believe that enforcement of the law is not needed to produce safety in aviation. The lack of action after the Carswell/Slaughter report is a dramatic indication of CATA's reluctance to enforce. In that context there were requests for action from a provincial minister, complaints from various sectors of the travelling public, the report detailing serious problems, and a commitment to the federal Minister of Transport, from CATA management, that an 'aggressive' enforcement campaign would be instituted.

The result? A few more inspectors, no specialty training in enforcement, little action on the Carswell/Slaughter recommendations, and public and private attempts to discredit the report.

The Commission has heard evidence that in all regions of Canada breaches of regulations involving unsafe practices, are rampant. The norm amongst the smaller carriers is apparently a mode of operation involving lack of regard for manuals and proper maintenance, fatiguing hours for the pilots, overloading, and disregard of dangerous weather conditions.

There have been suggestions that the lack of enforcement is a result of reluctance on the part of CAI's to act as 'policemen'. Clearly, certain individuals do not wish to be involved in this form of regulation.

However, there have been many more concrete examples of policy directives and case interventions from senior CATA personnel to stop enforcement actions. The Commission has also seen memos and individuals (Mr. Ned Carnie) who attest to the decline of morale amongst inspectors, which has resulted from the lack of a serious enforcement commitment in Transport Canada. The Lowery report, based on 250 interviews, is also strong evidence of the desire of Group members for 'greater Air Administration Management commitment to enforcement'. (p. 24). Such a commitment would require new policy guidelines, and a re-deployment of personnel and resources to this function.

The Group submits that a strong statement from the Commission of the crisis proportions of the problem would be of the utmost assistance in securing the Ministerial attention necessary to reverse the current situation." (Emphasis added.)

The Aircraft Operations Group also made special reference to enforcement problems relating to helicopters as follows:

"The helicopter is a complex machine in construction and operation, and due to its many moving parts has many more chances of failure, necessitating maximum attention from an Aircraft Maintenance Engineer. . . .

The need for this type of Air Transport is greatest where there is some barrier to access--mountains, lakes, muskeg, snow, etc. It also follows that in such operations, the selection of level open area for emergency landings is extremely limited, hence the urgent requirement for reliability in the aircraft. . . ."

It was also noted that special attention should be given with respect to airworthiness, maintenance procedures, pilot licencing, and air regulations regarding the operation of helicopters.

AIRWORTHINESS INSPECTORS (TI)

One of the most constructive briefs submitted to the Commission was that of Mr. D. T. Berg, Regional Airworthiness Inspector for Ontario. He supervises 22 airworthiness inspectors, also known as technical inspectors (TI).

The airworthiness inspectors are concerned about the credibility of the Department of Transport. Aircraft operators commit violations not followed by any enforcement action. They say this is due in some cases to a lack of clear standards of enforcement and in other cases to slow or inadequate enforcement proceedings. The airworthiness inspectors feel that the suspension and fine schedules presently in effect do not deter violators. They say "aircraft maintenance engineers under suspension merely go on holidays, until suspension period is completed, and then return to pick up their re-instated licence and go back to work".

At the time of his presentation to the Commission, Mr. Berg's inspectors had authority to inspect aircraft, buildings, equipment, records, licences and log-books under section 211(7), section 219, section 807 and section 808 of the Air Regulations. They did not have any powers specific to enforcement beyond such surveillance. Mr. Berg recommended to the Commission that the airworthiness inspectors be given the power to detain aircraft under section 813 of the Air Regulations. They subsequently received this authority from headquarters.

Mr. Berg also recommended the following enforcement powers be given to his inspectors:

1. The power "To suspend the Certificate of Airworthiness or Flight Permit issued in respect of any aircraft which is believed to be unsafe for flying (Section 212)".
2. The power to suspend documents of entitlement under section 407.

They were particularly concerned with suspension of licences in their own field of expertise, namely, those of aircraft maintenance engineers.

With respect to the suspension of certificates of airworthiness, Mr. Berg said, "I can recall one case when I used to go and inspect airplanes; and as I was driving out, I had left a whole bunch of deficiencies with the person, and he assured me that they would be looked after before he flew again. Then, as I was going down the road, he went charging off in the air".

He cited what he called a typical example of failure in enforcement of the Air Regulations as follows:

"This example involves a small charter operator of a DC3 aircraft. In an effort to increase his legal payload, after operating regularly overloaded, he submitted a Weight and Balance Report, showing a reduction of 1,463 lbs. in the empty weight. When asked to explain how this weight difference had been achieved, his explanation was not acceptable. Consequently, the operator was requested to re-weigh the aircraft. He, therefore, indicated by a letter to the AME, with a c.c. to the D.O.T., that the aircraft would be re-weighed. The result of this alleged re-weighing was submitted to the D.O.T., showing 1,503 lbs. less than the original empty weight. A team of

Department of Transport Inspectors investigated the AME's facility, and found that the DC3 had only been on the ground a short time according to the tower report. Further questioning of the AME elicited that, in fact, the DC3 had not been weighed at all, a false set of figures had been used, and this had been at the instigation of the operator. A hand-written note on the letter instructing the AME to re-weigh the aircraft, told him to 'fudge' the figures. This letter was obtained from the AME. Eventually the aircraft was properly weighed at another facility.

Enforcement action was instituted, and charges laid against the operator and the AME by the RCMP. On the initial hearing, an objection by defence counsel delayed action for over a year, by which time the charges against the AME had expired due to the statute of limitations. . . .

This flagrant forgery; deliberate flouting of regulations; and unsafe operation of an aircraft, was, therefore, allowed without penalty of any kind to any of the licenced persons involved. Considerable time and effort, together with considerable expense, went for nothing. The D.O.T. is left looking stupid, and the Inspectors frustrated. This operator has a history of deliberate violations, and unsafe operations. The public is still exposed to this carrier, and the Department of Transport appears powerless."

His further recommendations are as follows:

- "1. If a high level of safety is to be maintained, as it relates to airworthiness, the Department of Transport must provide the regional offices with the following:
 - a. adequate funding to accomplish inspection procedures.
 - b. adequate manpower to provide effective field coverage.
 - c. training to ensure inspectors and the Department remain current with technology of the industry.
 - d. less requirement for inspector involvement in clerical assessment of the industry.
 - e. authority delegation to enable technical inspectors enforcement capability.
 - f. authority to organize and implement procedures most effective in application of their responsibilities.
2. Headquarters of the Department of Transport must be restricted to the development of effective policy and regulations. Regional offices must be responsible for procedures used in meeting requirements of such policy.

3. Headquarters must monitor application of policy, nationally, to ensure interpretation of rules regulations and procedures are consistent through the Department and industry.
4. Headquarters must evaluate, modify, and monitor, internal procedures, to ensure effective accomplishment of goals and objectives of the Department.
5. The Department of Transport must develop procedures for evaluating and modifying the Rules and Regulations, to realistically control the industry in accordance with the state of the art.
6. The Department of Transport must provide definitive airworthiness standards as they relate to maintenance, manufacturing, importation and exportation of all categories of aircraft.
7. If the expertise of the Department is to be maintained, salaries for Technical inspectors must be on a par with, or higher than, the industry. Professionals cannot afford to stay with the Department of Transport."

Mr. Berg felt that the airworthiness inspectors are the last in line of priority. He said his staff complement has not changed since 1967, and "In fact, we lost one position at the beginning of 1978". He noted that the inspectors spend about 40% of their time in the office, 60% in the field and would like that reduced to 30% of the time in the office. Only 1% of aircraft under 12,500 pounds are audited each year, he said.

INTERNATIONAL ASSOCIATION OF MACHINISTS AND AEROSPACE WORKERS

On behalf of the Canadian Airways Lodge of the International Association of Machinists and Aerospace Workers, Messrs. M. P. Morel and R. A. Garlick, employees of Canadian Pacific Air, also presented a brief. Unlike Mr. Berg and his inspectors who are primarily concerned with small aircraft and aircraft maintenance engineers, Messrs. Morel and Garlick expressed concern about the lack of enforcement of airworthiness standards with respect to large aircraft. They suggested that there should be a resident airworthiness inspector assigned to the main base of each of the major carriers and at all major airports.

With regard to the role of airworthiness inspectors, Messrs. Garlick and Morel concluded, "The airworthiness inspector should be responsible for the enforcement of regulations, he should not be concerned with company or individual image, neither should he be a

promoter of aviation, but he should be a strong, ardent promoter of safe aviation, and he must have the availability to discipline any violators very strongly". They cited examples of strong FAA action such as the American Airlines fine of \$500,000.00 for violations concerning improper maintenance. They felt that the Ministry of Transport should also have the ability to levy fines.

AIR TRANSPORT ASSOCIATION OF CANADA (ATAC)

The Air Transport Association of Canada, which is the national organization representing the Canadian commercial air transport industry, also submitted a brief on enforcement. Regarding the language of legislation, ATAC states:

"...Legislation affecting the safety of millions of passengers a year and carrying with it criminal sanctions for its violation must be certain and unambiguous. . . ."

In its brief, ATAC also addressed the question of public consultation in the civil aviation rule making process, arguing that all proposed rule changes should be published in the Canada Gazette prior to enactment, in addition to being circulated within the aviation community, and a reasonable period of time should be provided for comment. ATAC further addressed the question of civil penalties in the following manner:

"The importance of air transportation to remote communities was clearly evidenced throughout Part III of this Inquiry. A classic example of this problem was given during the evidence of Mr. L. Chartier, the Regional Controller of Air Services for the Quebec Region of D.O.T. Mr. Chartier confirmed that over two thirds of the total area administered by the Quebec region relied solely upon air transportation for the movement of passengers and freight. Mr. Chartier also confirmed that most of the communities in the areas in question were served by one airline only and that such communities would be severely affected by any disruption in air service. There are over 40 communities in the area in question. The area is made up of over 350,000 square miles including the lower north shore area, much of the northwestern Quebec area, all of Nouveau Quebec (that area of Quebec north of the 59th parallel) and all of the Eastern Arctic. Similar situations exist in all of the other DOT regions in Canada.

Also, as may be seen from the evidence adduced during Phase III the majority of the enforcement problems occur in the more remote areas of Canada which are totally dependent upon air service.

The reluctance of the DOT to suspend or cancel an Operating Certificate is well founded. The frustration of having no alternative other than laying a charge under the Aeronautics Act would be removed if there was provision for a system of fines which could be instituted by the DOT. Such a system would provide a 'middle' option which would deter the carrier but ensure the continuation of service.

ATAC recognizes that the concept of civil fines is relatively new in Canada, however, it has been an effective means of enforcement in the United States.

It should also be noted that other enforcement bodies are now recognizing the enforcement value of civil fines. For example, the Discipline Committee of the Law Society of Upper Canada recently adopted a proposal envisaging the use of civil fines as part of its enforcement procedures. In setting out its reasons relating to this proposal, the Law Society stated as follows:

'While it is recognized that there must be a penalty that in severity is between a reprimand in Convocation and disbarment, there has been from time to time the view expressed that a suspension is not appropriate for several reasons. After a thorough discussion the Committee recommended that appropriate amendments to the Act be sought to add as a penalty, the power of fine. The proceeds of such fines would be retained by the Society.'

While the Penalty Concept Paper argues against the implementation of a Civil Penalties provision ATAC submits that its advantages far outweigh its drawbacks. . . ."

ATAC also submitted that there should be authority for the issuance and enforcement of a cease and desist order under Part I of the Aeronautics Act; the right to suspend or cancel a portion only of an operating certificate; minimum fines for repeat offenders; and the institution of a civil aeronautics appeal and review board. Problems relating to the delegation of authority, the difficulty in enforcing unlicensed commercial air service operations, and the relationship of economic regulation and safety were also addressed.

CANADIAN AIR TRAFFIC CONTROL ASSOCIATION, INC. (CATCA)

The Canadian Air Traffic Control Association, Inc. expressed a concern about its role in the enforcement process as follows:

"Insofar as the 'enforcement' of regulations, orders, practices, and procedures are concerned we see two divisions from our vantage point. First there is the reporting by controllers of alleged pilot violations of the Air Navigation Orders and Air Regulations. Secondly, controllers are faced with the problem

of having to 'enforce' on pilots directives of the Department of Transport that really amount to good airmanship practices that the pilot should be responsible for without our 'enforcement' of his operation. In both cases controllers would like to be removed from the enforcement process."

CATCA also complained that the enforcement of IFR weather minima by the Legislation and Regulations Division is almost impossible. It suggested either adopting the procedure similar to that in effect in the United States whereby the regulations do not allow a pilot to commence or execute an approach to an airport if the weather is reported to be less than the minima specified for the approach, or allowing the pilot to use his discretion as to whether he will land or take-off regardless of the reported weather.

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CANADIAN AIR LINE PILOTS ASSOCIATION (CALPA)

The brief submitted by CALPA on the subject of enforcement concerned itself mostly with the principle that a proper system of enforcement requires that the law be perceived as being applied fairly in order that it may be respected. CALPA was particularly disturbed with the fact that a number of enforcement cases involving airmen are presently handled through a letter of allegation system which does not provide for a hearing, and there is no procedure for an individual to confront or cross-examine his accusers who are not identified. The CALPA brief recommends the creation of an appeal tribunal to which those subject to disciplinary procedure may apply for relief. In that respect the brief concludes as follows:

"Any legislation or regulation in this respect should provide for a simple, expeditious, but well organized procedure regarding filing the case before the tribunal, notification, discovery, audi alterem partem, the conduct of the hearing, etc.

The procedure must be simple and clear enough so that it will not be perceived as a lengthy criminal prosecution which would not only be expensive but might result in 'a media circus' and personal anguish for the individuals involved. An individual must not be dissuaded from access to the tribunal by such factors."

SIOUX LOOKOUT, SANDY LAKE AND BIG TROUT LAKE

As was reported in Volume 1 of this Report, public hearings of the Commission were held

in Sioux Lookout, Sandy Lake and Big Trout Lake in Northern Ontario. During those hearings the question of enforcement was canvassed amongst other matters.

THE TOWN OF SIOUX LOOKOUT

A submission was received by the Commission from the Town of Sioux Lookout. Air service is particularly important in that community in which 6% of employment depends primarily on aviation. The Commission was advised that in that area there is more than one aircraft per 100 inhabitants. The concern of the residents of Sioux Lookout is capsulized in the following comment in their brief:

"... In a sense we have been at a disadvantage in discussing enforcement; we have seen little evidence of it ..."

GRAND COUNCIL TREATY #9

Grand Council Treaty #9 presented a brief to the Commission at Sioux Lookout. Its purpose was set out as follows:

"This presentation by the Grand Council Treaty #9 organization seeks to address, directly, the neglect of Federal aviation regulations as they apply to northern Ontario aviation north of the 48th parallel, the home of 20,000 Ojibway-Cree Indians."

Some of the salient features of the brief are reproduced below:

"As a result of our initiative in voicing our demands for a full-scale public inquiry through public exposure and political pressure, the Ministry of Transport directed the 'Northern Ontario Aviation Study Report' in the summer of 1977 to obtain first-hand knowledge regarding the reports emanating from the north respecting air safety in the region. This report listed eighteen (18) findings and fifteen (15) recommendations.

To what extent the findings and recommendations of this report have been acted on and implemented has not been made known by Transport Canada. It is obvious that very little action has taken place in view of the increasing number of air crashes that have taken place since 1977. In the ten-year period between January 1970 and February 1980 a total of 64 fatalities and 63 serious injuries involving 127 people in aircraft accidents took place north of the 48th parallel.

It is not sufficient nor accepted to simply increase the number of accident investigators or aviation inspectors in northern offices to deal with the whole aspect of aviation safety in our homeland as that report suggested." (Emphasis added.)

With respect to a fatal crash on February 7, 1975 at Sandy Lake of a Beech 18 owned by Tomahawk Airways, the brief expressed the following concerns about enforcement:

"The first recommendation of the jury at the inquest, requested a broader form of inquiry to be implemented into air safety regulations by the Federal Government, allowing for a wider scope of investigation pertaining to any aircraft investigation. This has been met by your Commission's mandate but there is no evidence that the other three (3) recommendations involving enforcement, weighing facilities and maintenance of bills of lading have been implemented."

With respect to medical evacuation, which is a matter of serious concern in this area, the following special reference was made:

"Since our people do not have access to highway ambulance services which the Province of Ontario provides to the rest of its citizens, medical emergency evacuees are compelled to embark on obsolete aircraft, which, except in one or two cases, do not have the proper medical equipment to cope with extended flights from isolated nursing stations to the Zone Hospital in Moose Factory and Sioux Lookout, Ontario. To further compound this major problem as it is, many medivac pilots have had to initiate flights into unknown weather conditions, at the destination point. Such hazards as deteriorating weather enroute has been the experience of many pilots who do not have proper weather forecasts and advisories from the existing Atmospheric Environment Services (AES) stations at their disposal."

In Sandy Lake and in Big Trout Lake, the Commission received submissions from the following: the Sandy Lake Band Council, the Deer Lake Band Council, the North Spirit Lake Band Council, the North Caribou Band, the Pehtabun Chiefs, the Pikangikum Band Council, the Wabigoon Lake Band, the Kingfisher Lake Band, the Community of Angling Lake, the Bearskin Lake Band, the Muskrat Dam Band, the Sachigo Lake Community and the Fort Severn Band.

These communities are completely dependent for most of the year for their survival on the local air carriers. They are all concerned about the state of aviation safety in their

communities and expressed the opinion that the unsafe conditions are by reason, in part at least, of the lack of enforcement of aviation safety standards.

The following are excerpts from some of the briefs submitted:

- Chief Saul Fiddler of the Sandy Lake Band Council:

"It is an air carrier's responsibility to ensure that no intoxicated person be allowed to board an aircraft. This responsibility is seldom exercised by our air carriers. Since altitude seems to magnify the effects of alcohol, we occasionally fly with passengers who are so drunk that they must be held down."

- Chief Abel Rae of the Deer Lake Band Council in reference to a fatal aircraft crash at Deer Lake on March 24, 1980:

"The Deer Lake air strip is less than a year old. Last spring representatives from the Ministry of Transportation and Communications came into the community to train workers in the operation and maintenance of a local airport. Since that time there has been a lack of adequate supervision; no M.T.C. personnel came in to inspect the air strip during the winter. Local workers were expected to phone Thunder Bay regarding problems. Several months ago one official promised to come within two weeks, but never arrived. The lack of adequate supervision of the workers and the total absence of air strip inspection over the winter caused the treacherous conditions so evident on March 24."

- Chief Stanley Rae of the North Spirit Lake Band Council:

"Passenger safety does not seem to be a very important issue with our air carriers. Often, the pilot neglects to tell his passengers to fasten the seat belts. Often, there are no seat belts to fasten, in any case. It is not unknown for planes to be overloaded, for passengers to sit on crates."

- The Pehtabun Chiefs:

"... Several years ago a Beechcraft was chartered by the Roman Catholic mission to fly to Kenora. This plane went down on a remote lake. The eight passengers, a baby and the pilot all managed to swim safely to shore. Since no lives were lost the crash warranted no media coverage whatsoever. Had this crash, or the Mamakeesic crash in Red Lake or the Fraserdale crash

occurred in the south, we are sure the media would have raised a hue and cry about unsafe flying conditions. But, because we are far from the centres of power in the south, our constant requests for improved safety standards in the north have been ignored by the regulatory agencies."

The Pikangikum Band Council:

"Many of our people have voiced their concern about flights carrying intoxicated persons and intoxicants. Pikangikum is a dry community. To avoid our attempts to control the import of booze onto the reserve, some band members charter planes out of Red Lake. The typical booze run will land some distance from the community, usually near a trapping cabin. The band member is usually met or will walk into the community.

Last year one band member died of exposure when he was dropped from his booze run three miles from the reserve. Last summer, a band member was dropped off at Pickerel River. He walked to the nearest trapping cabin. For three days we tried to find him. We called . . ., his charter, to find out what had happened to him when he was a day late in returning to Pikangikum. We were told that he was still in Red Lake. We did not find him for another two days. He was hungry by the time we found him."

The Wannumin Lake Band:

"During the winter of 1977, a . . . DC3 made an emergency landing with smoke coming out of its engines. After letting the smoke go out, the plane resumed its flight to Pickle Lake -- in the middle of a snowstorm. This might sound like over-exaggeration but it's not. We just don't keep a record of all these incidents but we're aiming to start doing just that."

The Kingfisher Lake Band:

A pilot in February, 1980 flying a Cessna 180 "swooped down the height of 10 or 12 feet off the ice surface with a Beaver plane sitting on the ice and also people standing around. People had to duck the plane."

The Angling Lake Community:

". . . tend to be overly-reckless in the air i.e. fooling around causing anxiety to Indians. For example, some people were quoted to say: 'pilots were playing in the air while they had passengers on. Sometimes, they go way far down and come up again. And sometimes they would touch the water and go up again.'"

The Bearskin Lake Band:

"The passengers were attending a conference in Round Lake. When they prepared to leave, six people were on board. The plane was unable to take off. Three were then transferred to a Cessna 180 aircraft. Again, the Beaver was unable to take off for some time. Finally, after take-off was achieved, the plane landed in Muskrat Dam to unload some parcels. When leaving Muskrat Dam, the plane again had difficulty taking off. After two unsuccessful attempts, take-off was finally achieved and the remainder of the flight proceeded without incident. Throughout this time, the pilot either could not or would not provide any information to the concerned passengers."

- The Muskrat Dam Band made the following specific complaints:

- "- Inadequate overall maintenance of the existing aircrafts.
- Risk flying in bad weather and in darkness.
- Using aircrafts when malfunctioning.
- Majority of small aircraft have improper or no seat belts for their passengers.
- Pilots taking excessive passengers and overloading the planes' capacity.
- The aircrafts having insufficient fuel in their tanks for their trips."

CANADIAN OWNERS AND PILOTS ASSOCIATION (COPA)

The Canadian Owners and Pilots Association is the principal spokesman for the private aviation community. Philosophically, its members are opposed to extensive government regulations, of which more will be said later. However, the association did comment on the inadequacy of enforcement insofar as it relates to private aviation.

Mr. K. Weinstein, an aviation consultant, testified on behalf of COPA. He was of the opinion that the lack of enforcement results in a disregard for the safety rules. He said, "In many cases, I have seen aircraft flown for two and a half years without a single certification for a major repair, without a certificate for airworthiness and it all sort of breeds a contempt for things that could be handled better". When asked how serious, according to his experience, is non-compliance with regulations today, he said "I come

across examples almost once a month, maybe". He indicated several instances of breaches of the regulations, including the following:

"I have been called to people to inspect a major repair that had been done, and I go there, and I find that aircraft, that repair was completed two and a half years earlier, and the aircraft has flown two hundred and fifty hours since. No survey, no certificate of anything, no release certificate. No engineer has ever signed it.

The owner simply said: 'Ah, hell, I'll wait too long, so I'll fly the thing, anyway, and eventually, I will get perhaps around and find somebody willing to sign this thing.' "

He concluded as follows:

"Now I say this in the presence of Mr. McLeish who is here and I am sure that the powers in the DOT would be horrified if they only knew what was going on in things that are neither authorized or legitimate because people say, well, just go ahead with it, and hopefully we won't be found out."

MARSHAL W. NEY, VICTORIA, BRITISH COLUMBIA

Mr. Marshal W. Ney, of Victoria, British Columbia, has had 35 years of aircraft maintenance experience and for the past 14 years acted as Chief of Maintenance with the RCMP Air Division. He testified in Vancouver with respect to the enforcement of the Air Regulations, Air Navigation Orders and airworthiness standards. He expressed his opinion of the present method of enforcement as follows:

"Where enforcement of airworthiness standards is sometimes attempted, the commercial operator is immediately on the phone to his member of parliament complaining harassment and interference with normal business and operations. The D.O.T. then withdraws; the snail retracts into its shell, and everything continues in a state of impeccable inertia. . . .

The D.O.T. (Civil Aviation) has strange nesting habits. They assemble downtown in large city burrows away from their normal area of predacity, save for Montreal.

I have always held the opinion that the D.O.T. airworthiness inspectors, accident investigators, flight safety personnel, etc. should have their offices at major airports because:-

- (1) They would be more accessible to the aviation community.
- (2) They would see what was going on.
- (3) Their immediate presence would have a salutary effect.
- (4) Enforcement should become more acceptable to them since they would be in a more stimulating 'real world' working aviation environment as opposed to the 'downtown' remoteness and inertia.

When the D.O.T. receives a complaint (anonymous or otherwise) that a specific operator has violated a regulation, order or airworthiness standard, a 'letter of explanation' is invariably sent to the company concerned. The letter of explanation requests that the operator provide an 'explanation' concerning the alleged infraction. The letter of course alerts the operator who then covers up his tracks (often falsifying records) - and everyone is happy."

(Emphasis added.)

THOMAS J. BARNES, VANCOUVER, BRITISH COLUMBIA

Mr. Thomas J. Barnes, a civil aviation inspector with Transport Canada in the Enforcement Section of the Pacific Region, presented a Concept Paper outlining a suggested restructuring of the enforcement specialist role within CATA. In particular, he suggested that the centralized approach now in effect be replaced by geographical units dispersed within each region under the responsibility of an enforcement specialist. He explained the rationale for such a change as follows:

"Well, primarily I feel that there isn't specific enough guidelines for Inspectors, whether it be Airworthiness, Air Carriers, Flight Training Standards personnel, when they are in the field, to report violation matters and matters pertaining to aviation safety to an investigator, and I think with the field unit concept, the District Investigator, you would be defining specific geographical areas and any inspector entering that area could carry out his inspection, whether it be by throwing out investigation check lists, and if there are any discrepancies noted, that he would be compelled to report any violations, or matters pertaining to safety, to the District Investigator."

COMMENT ON SYNOPSIS

Although some of the criticisms advanced before the Commission were, in my respectful opinion, intemperate and exaggerated, there was, nevertheless, a good deal of substance

in all of them. The criticisms were not directed towards the enforcement specialists or the inspectors who are, under the circumstances, performing their function as well as the process permits as the statistical information set forth in Part IV of this Chapter disclosed.

It cannot be overlooked that the major criticisms emanated for the most part from within the Administration, and a clear picture emerged as to the deficiencies in the present enforcement organization and in the enforcement process.

It would be unfair to attribute the present inadequate state of enforcement to a complete lack of concern on the part of headquarters. However, it is clear, in my opinion, that the direction given by headquarters has failed to establish an effective enforcement arm of CATA. This is as a result of the organizational structure of CATA which assigns a low priority to enforcement as well as the philosophical differences between headquarters and the regions as to how compliance can best be achieved, to which reference will subsequently be made.

The deficiencies in the enforcement process, which I think were supported by what was presented to the Commission and which have had an adverse effect on aviation safety, can be briefly stated under the following headings:

- (a) the inadequacy of the legislation, to which reference has already been made;
- (b) the failure of headquarters to set forth clear statements of policy and guidelines;
- (c) the lack of support from headquarters of enforcement action recommended by the regions;
- (d) the limitation of the delegated authority granted to the regions;
- (e) the lack of surveillance;
- (f) The practice of invariably giving advance notice of audits;

- (g) the lack of manpower;
- (h) the absence of an enforcement presence in the aviation community;
- (i) the lack of training and equipment;
- (j) the failure to use inspectors as an important adjunct to enforcement;
- (k) the lack of a clearly defined role for the enforcement specialists and for the inspectors in the enforcement process;
- (l) the inadequacy of legal services;
- (m) the inadequacy of both administrative and judicial deterrent action;
- (n) the denial of natural justice in the enforcement process; and
- (o) the absence of an appeal tribunal.

The evidence and submissions have been of great assistance in identifying the deficiencies in the enforcement process and in the determination of what remedial action can be taken with a view to having enforcement play a more significant role in the aviation safety system. I will subsequently be making recommendations which I am confident, if implemented, can achieve such an objective.

PART VIII

CASE STUDIES

The evidence and submissions of a general nature were highly critical of the enforcement process and standing alone made out a strong case for change. However, it was thought desirable to test the validity of such criticisms by studying specific cases. The cases were not reinvestigated to determine whether the violations referred to actually took place and whether there was fault on the part of those referred to in the various reports. Nothing would now be gained by such an inquiry, and no additional light would be disclosed on the enforcement process by doing so. The purpose of the exercise was to consider how those responsible for enforcement went about their tasks with the evidence available to them and on the basis of the conclusions that they had arrived at. For my purposes I accepted the accuracy of what was disclosed in the files and reviewed the disposition of these cases on that basis. An examination of these cases presented a clear picture of the deficiencies in the present enforcement process and procedures and was of invaluable assistance in pointing the way to changes which I think should be made with a view to promoting aviation safety.

The case studies which related to deficiencies in the present enforcement process and procedures were innumerable, but time does not permit a reference to all of them. A few of the case studies have been selected which highlight ongoing problem areas in the enforcement process.

I. CAMP GAGETOWN, NEW BRUNSWICK, AIR CANADA FLIGHT 663, DC-9 TRANSPORT JET, MARCH 31, 1980

In Canada, there are numerous areas set out in the Designated Airspace Handbook and published on flight charts that warn pilots of dangerous, restricted or alert areas, military flying areas, student jet training areas, rocket ranges and aircraft test areas. The areas are classified as CYR, CYD and CYA with CY indicating Canadian and the R, D and A standing for Restricted, Danger and Alert respectively. The definitions of each of these areas are as follows:

"2.10.1

Restricted Areas

A restricted area is an airspace of defined dimensions above the land areas or territorial waters within which the flight of aircraft is restricted in accordance with certain specified conditions. In general, flight within an active restricted area is prohibited unless prior permission is obtained from the controlling authority. For pilot convenience, restricted areas are depicted on all aeronautical charts. IFR flights will not be cleared through active restricted areas.

2.10.2

Danger Areas

A danger area is an airspace of defined dimensions within which activities dangerous to the flight of aircraft, such as artillery firing or aerial gunnery, may exist at specified times. Due to the obvious hazard to flight, danger areas should be avoided during active periods.

Danger areas and their active periods are depicted on all aeronautical charts. IFR flights will not be cleared through active danger areas.

2.10.3

Alert Areas

An alert area is an airspace of defined dimensions within which a high volume of pilot training or an unusual type of aerial activity, such as soaring, aerobatics, parachuting or hang gliding, may be carried out. The aerial activity in alert areas is to be conducted in accordance with the Visual Flight Rules. Pilots of non-participating flights may enter alert areas at their own discretion, however, due to the nature of the aerial activity, extra vigilance is recommended. Pilots of participating aircraft, as well as pilots crossing the area, are equally responsible for collision avoidance. Alert areas are depicted on all aeronautical charts. IFR flights will not be cleared through active alert areas."

The Aeronautical Information Publication (AIP Canada), a useful source of information for flight crews, expands on these definitions as follows:

"Each danger, restricted and alert area within Canada has been assigned an identification code group which consists of three parts as follows:

- Part (a) will consist of the nationality letters 'CY'
- Part (b) will consist of the Letter 'D' for danger area, the letter 'R' for restricted area or the letter 'A' for alert area.
- Part (c) will consist of a three digit number which will identify the area. This number will also indicate the region of Canada within which the area lies according to the following table:

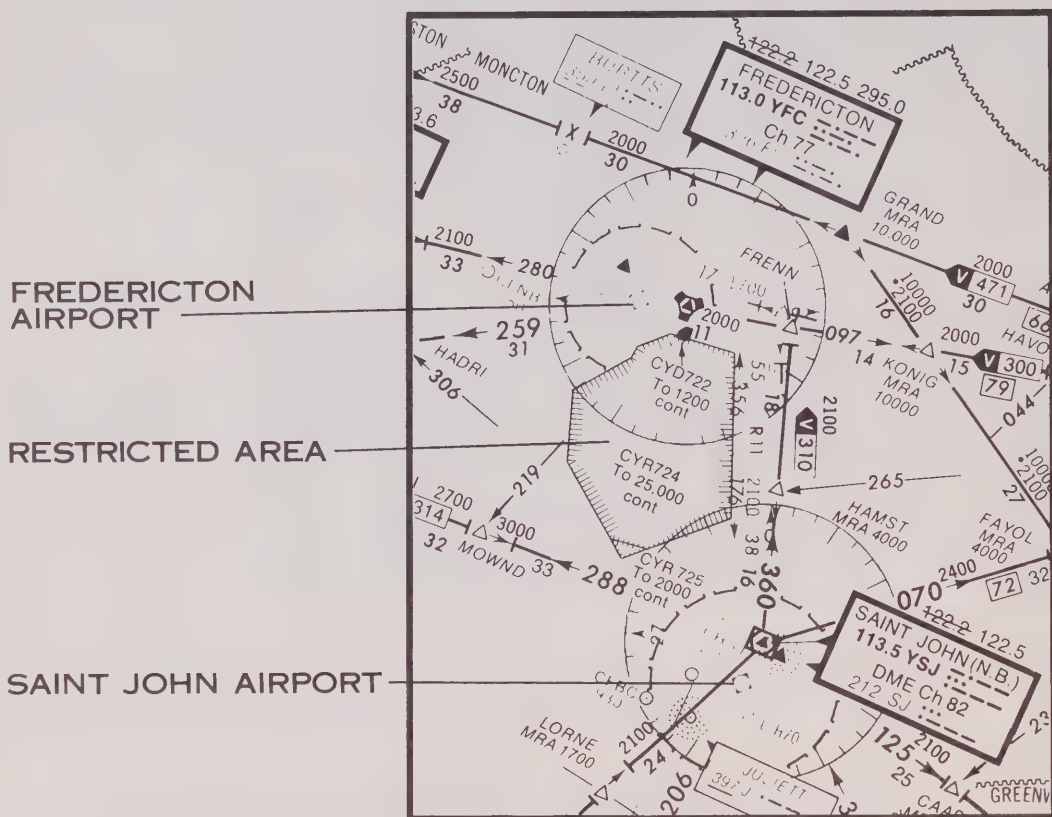
- 101 to 199 - British Columbia
- 201 to 299 - Alberta
- 301 to 399 - Saskatchewan
- 401 to 499 - Manitoba
- 501 to 599 - Ontario
- 601 to 699 - Quebec
- 701 to 799 - New Brunswick
 - Nova Scotia
 - Prince Edward Island
 - Newfoundland
- 801 to 899 - Yukon Territory
- 901 to 999 - Northwest Territories
 - (including the Arctic Islands)

Part (d) will, in the case of alert areas, consist of the letter A, H, P, S or T in brackets after the three digit number to indicate the type of activity within the area as follows:

- A - acrobatic
- H - hang gliding
- P - parachuting
- S - soaring
- T - training"

These areas are clearly shown on all aeronautical charts of the area in question. Camp Gagetown is a restricted area. A typical chart outlining the restricted area is set forth below:

RADIO NAVIGATION CHART OF GAGETOWN AREA



HISTORY OF THE FLIGHT

On March 31, 1980 Air Canada Flight 663 left St. John for Fredericton on a scheduled IFR flight of an estimated 23 minutes' duration. If one were to fly in a direct line from St. John to Fredericton, the flight would overpass Camp Gagetown. Flight 663 had not been given a clearance to do so. The flight was cleared for a visual approach to Fredericton, and in anticipation of the landing, the co-pilot, who was in control, used the airport chart that showed runway and taxiway positions. He did not consult the instrument approach chart or any other chart that clearly identified the Gagetown area.

Flight 663 penetrated the northern boundary of the restricted zone when live 105 mm. shells were being fired from the artillery range. At the time the jet entered the restricted airspace, a salvo was already airborne. The shells did not strike the aircraft, but officials of Transport Canada later estimated that if the pilots had stayed on the prohibited track, the shells might have hit the transport plane from underneath. Fortunately, the Gagetown control tower and a military helicopter pilot saw the DC-9 in the impact area and called for a check-fire.

The danger period lasted less than one-half minute. The captain realized the error and directed the co-pilot back to the proper airway. Subsequently, Fredericton tower advised the flight that the firing range was inactive and cleared the flight to continue the approach. The aircraft landed safely at Fredericton.

While the co-pilot was in control of the landing of the aircraft, the captain was performing the routine checks and watching for conflicting air traffic. He was unaware that his co-pilot, new to the run, had never approached the particular runway in use from the south and did not know of the restricted area.

INVESTIGATION

As is the practice in cases of violations of this nature, Transport Canada notified both pilots of their alleged violations of the Prohibited and Restricted Airspace Order and asked them to show cause why their licences should not be suspended. Included in the letter to the pilot was the following comment:

"The information received thus far indicates that although you were in command the first officer was controlling the aircraft at the time. We also understand that live firing with 105 MM guns was in progress as you entered CYR 724, and a check fire was called only after a chance sighting of your aircraft was reported by a military helicopter pilot."

A similar letter was sent to the co-pilot.

In addition, it was alleged that the captain violated s. 520(1) of the Air Regulations by not supervising his co-pilot more closely. That regulation reads:

"520. (1) No aircraft shall be operated in such a negligent or reckless manner as to endanger or be likely to endanger the life or property of any person."

The captain denied violating section 520(1), relying on the fact that the first officer was licensed and qualified to operate the aircraft. After requesting through legal counsel all pertinent information on file at Transport Canada, he offered his explanation. The captain explained that the first officer was flying. As previously mentioned, he did not know that the first officer had never approached the runway from that direction. The captain also claimed that he did not know that his first officer was using the airport chart that would have depicted only the runway layout without any mention of Camp Gagetown. He said "if an error was made, it certainly was not a deliberate violation". He closed his letter of explanation saying that he wanted better charts to show the approved visual routing and he wanted the Fredericton tower to remind incoming aircraft of the restricted area.

The co-pilot claimed that "any penetration of the northern boundary of CYR724 would have been minimal and would not have threatened the safety of the flight".

DISPOSITION

Transport Canada rejected the pilots' explanations and forwarded the following letter to the captain:

"The appropriate officers of Transport Canada believe that the public interest would be served in this case by a licence suspension of four days. Therefore your Airline Transport Pilot Licence No. YEA 1107 is hereby suspended from June 26, 1980 to June 29, 1980 inclusive.

Section 807 of the Air Regulations requires that a suspended licence be returned to the Minister. Due to the briefness of the suspension period, it may be impractical for you to forward your licence to this office. With your assurance that you will not exercise the privileges of your pilot licence during its suspension period you may retain it in your possession.

Your comments on the approach chart for Fredericton are noted. The copy of the Air Canada Approach Plate (Fredericton VOR-2) that accompanied your report of 31 March, 1980 does show CYR 724 quite clearly though.

We will pass on, to Air Traffic Services, your suggestion that Fredericton Tower should remind all incoming aircraft of the closeness of the restricted area."

Transport Canada also suspended the co-pilot's licence for four days from June 28, 1980 to July 1, 1980 inclusive. The dates of the two suspensions were not the same. Apparently, the suspensions were designed to coincide with the pilots' days off.

COMMENT ON CASE STUDY NO. 1

The consequences of a transport aircraft being shot down in mid-flight are obvious. The aircraft was in danger. There was no legitimate excuse for the infraction and no mitigating circumstances. It is apparent from the explanations provided to Transport Canada by the pilot and the co-pilot that even after the event, they failed to appreciate the seriousness of their conduct and minimized the danger which was clearly extant.

A suspension of four days, to coincide with the captain and co-pilot's days off, could hardly impress upon them or others the gravity of the offence.

It should be noted that the captain suggested in his letter of explanation that the Fredericton tower should remind all incoming aircraft of the restricted area.

Mr. Ralph Lord, Superintendent of Air Regulations for the Atlantic Region, testified that he had made recommendations that the aircraft operating between St. John and Fredericton be given a voice advisory about the danger area, but at the time he had testified he had yet to receive a response.

The incident disclosed in this case study was not an isolated one. In the CATA brief on enforcement, the following is stated:

"On separate occasions two commercial jet passenger aircraft operated by the same air carrier encroached on the restricted airspace established over a military artillery range. Evidence was sufficient to provide reasonable grounds to believe that the Prohibited and Restricted Airspace Order had been violated in each case. In one case, following consultation between the RCCA and the airline Vice President, the Airline Transport Licence of the pilot-in-command was suspended for seven days under Air Regulation 407(a). He was also demoted to First Officer for three months and required to requalify for reinstatement as a Captain. The other pilot-in-command was required to demonstrate his competence to navigate a particular segment of the airway bordering on the restricted area. . . .

The shortest route between two of the carrier's terminals was through restricted airspace and was, apparently, frequently used on scheduled flights. On one of these occasions an artillery battery was about to commence firing when the aircraft was detected. . . .

The carrier was informed of the occurrences and cautioned to ensure that its pilots be made aware of the serious consequences of flying in prohibited or restricted airspace. This enforcement action has been successful to date in deterring further violations by the pilots employed by the carrier concerned."

The carrier referred to was not Air Canada.

It is to be observed that there is a reference in the portion of the CATA brief, reproduced above, to a suspension of seven days. Mr. Lord was asked how he would differentiate the case which resulted in a seven day suspension from that of the four day suspension in the Air Canada case. He stated:

"He chose to go up the St. John River VFR. We had information that indicated to us that he was having a little race with a DC-9 that was also going to Fredericton. As a matter of fact he lost it doing S-turns behind him to get in."

Mr. Lord also stated that to his knowledge the company did not demote the captain for three months, as the CATA brief indicates, and felt that there was some confusion in the CATA brief with another case.

It is apparent that notwithstanding the printed warnings on the appropriate aeronautical charts, even highly experienced pilots intrude into such areas. The air traffic controllers are reluctant to take the responsibility of having to provide a warning to pilots in these restricted areas. Although the responsibility for avoiding a restricted area is clearly that of the pilot and co-pilot, I do not think that it would impose an unfair burden on the air traffic controllers if, in future, a warning was given by them to pilots who might overfly restricted danger or alert areas. Such a warning should be given out of an abundance of caution although it should not relieve the pilot and co-pilot of the ultimate responsibility of avoiding such areas.

**2. FREDERICTON, NEW BRUNSWICK, C-FGZH, CESSNA 414,
CORPORATE AIRCRAFT, APRIL 5, 1976**

HISTORY OF THE FLIGHT

On April 5, 1976 a corporate light twin-engined aircraft departed Fredericton, with passengers on board, on a VFR flight to St. John. The pilot in command held a Senior Commercial pilot licence. His Class I instrument rating had lapsed to a Class II on the date of the flight. He also held a Class II flying instructor rating. Notwithstanding these qualifications, he failed to file a flight plan, flight notification or flight itinerary. As he approached Fredericton, Fredericton tower noticed that the aircraft was heading directly into the Gagetown restricted area. The tower broadcast a warning, but could not get contact. The pilot, although he was still within the positive control zone, had changed frequencies without authorization.

The pilot was unaware that at the time that he approached the restricted area, there was active artillery fire from Camp Gagetown. Shells weighing up to 100 pounds and fused to detonate in close proximity to metal were exploding in the vicinity. CF-5 fighter aircraft were at the same time practising in the immediate area. A formation of four military helicopters sighted the aircraft and gave chase. The helicopters, being slower than the airplane, were unable to intercept or positively identify it. Minutes later, St. John tower was able to make contact and advised the pilot to clear the area immediately. The pilot did so, reported clear, and upon request gave his name and licence number. He subsequently arrived safely in St. John.

INVESTIGATION

Transport Canada sent a show cause letter to the pilot suggesting possible contravention of Air Navigation Order, Series V, No. 4, the Flight Plans and Flight Notifications Order and Air Navigation Order, Series V, No. 9, and the Prohibited and Restricted Airspace Order. In his reply, the pilot admitted having acted in contravention of the Air Navigation Orders. He explained that he did not have time to shut down the engines in Fredericton which was taken to imply that he did not have time to file a flight plan. However, the tower records showed that the aircraft had been on the ground for 39 minutes prior to take-off. The pilot also said "Knowing that we were under radar at all times, I did not think it was necessary to file a flight plan". Neither Fredericton nor St. John have radar facilities.

DISPOSITION

Inspector David Slayter, of the Atlantic Region, who had investigated the matter, wrote the Regional Superintendent of Air Regulations as follows:

"For a pilot with (his) qualifications to operate an aircraft with passengers on board in a situation as obviously dangerous as the one outlined above reveals a total lack of professionalism bordering on incompetency. At the very minimum, I feel we should suspend his licence for 30 days, perhaps more. Any shorter suspension will undoubtedly result in the company giving (the pilot) a short paid vacation. Loss of wages for one month would seem a fair penalty to pay for a violation as serious as this. A lesser penalty would only make a mockery of the law in that it would indicate to the accused that the penalty for flying an aircraft through an artillery barrage is approximately equivalent to shooting birds out of season - both being assessed a fine having a dollar equivalent of \$300-500.

Since any suspension in excess of 14 days exceeds the delegated authority vested in the Regional Controller we will have to seek authorization for the additional penalty period from Ottawa."
(Emphasis added.)

The superintendent in Ottawa advised the Regional Superintendent of Air Regulations that a suspension beyond 14 days would not be authorized.

Inspector Slayter then wrote to Mr. Don Lamont (DLI) as follows:

"... I feel this is one of the most dangerous cases we have dealt with for some time and accordingly felt a penalty greater than the one provided by Inspection instruction section 1.2.1.1 was in order. Ottawa (John Pelletier) (LICR) has advised the RSAR that a suspension beyond 14 days will not be authorized. Two weeks to my mind seems so inappropriate I cannot in good conscience recommend same."
(Emphasis added.)

Mr. Lamont replied:

"Thanks for the opportunity to read that report. I have reviewed it and had thoughts on OW's reaction to a more severe suspension. We have some points against us as far as persuading OW (Ottawa).

- (1) Possibly first offence.
- (2) Quebecer? who will probably go to his M.P.
- (3) With the current bilingual problem in ATC they might use this to discredit us Anglophones in the Maritimes and show a need for Bil Com here.
- (4) No positive ident.

Therefore I agree with E.S. (Ernie Savard) an immediate 14 day sure suspension is better under the circumstances."
(Emphasis added.)

Transport Canada suspended the pilot's licence for a period of 14 days.

Mr. Lamont gave the following explanation of his reply to Inspector Slayter's memorandum:

"I think with the situation that prevailed at that time and the atmosphere that prevailed at that time, it was something that had to be considered and, in fact, as I recall, we discussed this with Mr. Slayter and this was just a note back today saying, okay, we talked about this and these are the things we have to be cognizant of. It was brought up by many people that the issue was very sensitive. There was another incident just previous to that which got the headlines in the paper, in the press and so on, and were related to what I was referring to and what I thought was in privacy to one of my colleagues. I think at that time it was taken as that and some time later we find it copies very well, and it's here. I don't think it was meant in the context of denying prosecution, alleviating the effects of an investigation into a prosecution or anything of that nature, it was just a statement that everybody was aware of the situation at that time."

Mr. Lamont further testified that this was an illustration of "the desperate need of the Enforcement specialists to have legal counsel". He said, "When I re-read that, I think today I might have been tempted to take it to court because of this circumstantial evidence".

In the brief to the Commission submitted by Inspector Slayter on behalf of the Air Ops Group (previously referred to) in relation to this case, Inspector Slayter stated:

"It is very difficult for the individual Inspector to sustain enthusiasm for this job when there is so little positive support behind one's efforts. Shortly after this incident, one of our own Air Regulations Inspectors flew through the same area under similar circumstances. To his credit, he brought this to my attention immediately and asked what I thought he should do. I told him he should turn his licence over to the RSAR for a period of at least fourteen days, if not longer. After consulting with the RSAR I was told that no enforcement action was to be taken."

COMMENT ON CASE STUDY NO. 2

This case is illustrative of many in which headquarters has set up unfounded roadblocks to enforcement action recommended by the regions.

As the record disclosed, the pilot upon request from St. John tower gave his name and licence number. There was no question as to his identity, and yet headquarters queried whether there was evidence of positive identification.

There was also concern expressed about political intervention and political considerations which should have no place in the enforcement process (a subject matter upon which I commented in Volume 1 of this Report).

Although there may be a legitimate difference of opinion as to the appropriateness of any penalty, in this case the reasons for rejecting the recommendations for a more severe penalty had no relationship to the gravity of the offence and the danger to which the pilot had exposed his passengers as well as himself.

This case is further illustrative of the difficulties created by the limited delegated authority granted to the regions.

**3. CANADIAN FORCES BASE, SUMMERSIDE, PRINCE EDWARD ISLAND,
C-FECC PIPER J3 CUB, PRIVATE AIRCRAFT, JULY 30, 1979**

HISTORY OF THE FLIGHT

The pilot of a light single-engined Piper aircraft departed Bathurst, New Brunswick, for Bouctouche. When he realized that he could not make it into Bouctouche because of poor weather, he headed for Prince Edward Island to land at a known field, but found it to be flooded. He then decided to head for an airport where he knew the surface to be paved, but missed it because of approaching darkness, having misjudged the time of sunset and darkness approached sooner than he had expected. The aircraft appeared suddenly at Summerside military aerodrome.

He had no radio, no anti-collision lights and no navigation lights and had not filed a flight plan, a flight note or flight itinerary.

As he approached Summerside military aerodrome, there was another aircraft, on final approach one-quarter mile from the runway, which had been cleared to land. He navigated his Piper Cub in front of the other aircraft and continued his approach to a landing on the taxiway adjacent to the runway.

Notwithstanding the darkness and the sudden appearance of an aircraft without lights, both the tower controller and the aircraft in the circuit fortunately saw the Piper Cub in time to avoid a collision.

The pilot was observed disembarking from the aircraft by military personnel and signed a "Visiting Civil Aircraft Report", which detailed the aircraft identification, type, owner, pilot's name and licence number and date and time of arrival. He subsequently admitted to Transport Canada inspectors that he was the pilot.

On inspection of the aircraft, military personnel noticed that the Piper Cub had what they called a "unique" fuel system. The aircraft carried a five-gallon outboard motor fuel tank as well as two other smaller fuel containers in the cabin. According to Transport Canada inspectors, the pilot had rigged a length of neoprene tubing to get the

fuel from the tanks "across the top of the cabin, out the door, around the right side of the windshield, and into the aircraft's fuel tank. The tubing was held in place by green tape".

INVESTIGATION

On August 24, 1979 Transport Canada sent the pilot the following letter, asking him to show cause why his private pilot licence should not be suspended or cancelled:

"We are in receipt of information that on 30 July, 1979, while you were acting as pilot-in-command of CF-ECC, you may have acted in contravention of Air Regulations, Sections 504, 210, 518 and 516(a) (b) (e) and (f) as well as ANO. Series V No. 4 Paragraphs 4(1) & 5.

It is alleged that on this date you flew CF-ECC with its fuel system so altered as to invalidate its Certificate of Airworthiness and in doing so contravened Section 210 of the Air Regulations. This was ascertained by personal inspection of CF-ECC by two inspectors from this office. That you later removed the unique auxiliary fuel system from the aircraft does not alter the fact that you flew it when its C of A was invalidated by virtue of the installation.

Some of our information is in the form of an Infraction Report filed by Summerside Tower which reads in part -

It is apparent that the subject pilot violated Air Regs. Paras. 516 a,b,e & f; 518; ANO V No. 4 Paras. 4 (1) (a) (b) and 5, in that he did not attempt to avoid other aircraft in flight and did not conform to the traffic pattern being flown by other aircraft.

He was unable to maintain radio watch and conform to instructions due to complete lack of radio equipment in aircraft.

He created a collision hazard.

He did not file a flight plan, note or itinerary into a military aerodrome.

He did not obtain prior permission to land at a military aerodrome. . . .

There is some possibility that you did not know where you were when you landed at Summerside. If this is so, it could in part be because of the tattered and outdated maps you carried. Failure of a pilot to provide himself with all available information appropriate to his intended flight, and this includes up-to-date maps, is considered a violation of Section 504 of the Air Regulations.

There is no record of a flight plan being filed for your aircraft when you departed from Bathurst, N.B. on or about 29 July, 1979, nor have we been able to locate anyone with whom you filed a flight itinerary. Such is also the case when you departed from Charlo on or about 1 August, 1979. We will require the name and location of the person, if any, with whom you left a flight itinerary for the above-noted flights. Failure of a pilot to file a flight plan or flight itinerary is considered a violation of ANO. Series V No. 4 Paragraph 4 (1)."

The pilot denied violating the Air Regulations or Air Navigation Orders. He addressed each regulation in turn:

"A.R. 210

C-FECC had a valid C of A upon arrival at Summerside and still has to-day. The fuel system was not altered. The presence of a 3/8 inch plastic tube attached to the gas cap does not affect the aircraft flight characteristics in any way whatsoever, regardless of speed, altitude or attitude. It would of course improve or increase its endurance in case of emergency, but on the subject flight it was not used.

A.R. 504 Complied with

Montreal Radio was called for weather and possible NOTAM that could affect the flight. Same procedure at Charlo in both directions. The latest map and VFR supplement were studied in the days prior to the flight in the Montreal Regional ATC Procedures office (QATP).

A.R. 516

- a) this was complied with by looking out the window.
- b) this was also complied with by avoiding the pattern formed by the other aircraft who had not turned final when I crossed the final at 100 feet A.G.L.
- e) aircraft has no radio - a watch was kept for possible signal from the Tower or vehicle on taxi way.
- f) NORDO and state of Emergency, as declared to the Tower upon arrival. (I was under the impression that my explanation had been accepted, and the fact that no one had suffered any inconvenience, a written statement was not requested.)

A.R. 518

Redundance from 516, A & B; nevertheless, I wish to confirm that I did not go near any aircraft while in flight.

My wife and daughter were informed of my trip to P.E.I. via Riviere-du-loup, Rimouski and the Matapedia Valley, following the road and that I was to return home Saturday or Sunday with a load of fresh ocean water boiled lobsters.

The landing at Summerside was purely accidental and non-intentional or pre-planned.

The address of my wife Aline and my daughter Suzanne is the same as mine.

When I realized that I could not make it into Bouctouche because of poor weather, I climbed to 6 or 7,000 feet. Prince Edward Island being well visible, I decided to go across from nearby Richibouctou Head. My intention was to land at a known field, but when I observed that it was flooded, I decided to go into Mount Pleasant where I knew the surface was paved. Unfortunately, I missed it because of approaching darkness.

When I left Bathurst for Bouctouche, the sun was high and bright and because we could fly beyond 9:00 p.m. (0100Z) in the Montreal area at that time of the year, I forgot that sundown was earlier by 50 minutes down east."

The civil aviation inspector who examined the unusual fuel system felt that the certificate of airworthiness was invalidated. He did not agree with the pilot's statement that "the fuel system was not altered". The inspector had taken photographs of the auxiliary tanks attached to the plastic tube which the pilot claimed would not affect the aircraft flight characteristics. The inspector also disagreed with the pilot's claim to have studied the latest information before the flight. He said that the only map the pilot had was years out of date. The inspector disagreed with each of the other explanations given by the pilot. He noted, for example, that the RCMP was asked to verify the pilot's claim that his wife and daughter were given a flight itinerary. The RCMP found that his wife was not at home. She was apparently on a holiday.

An examination of the pilot's file on record with the Department disclosed the following:

1. December 1964 - Transport Canada contacted him regarding poor entries in journey logbooks and possible charter operations on a rental privilege. Transport Canada said he was "asked to clean up his act".

2. December 1965 - the region contacted the pilot regarding aircraft damage related to an unoccupied aircraft with the engine running. Again he was "asked to clean up his act".
3. June 1966 - the pilot landed on the tarmac instead of the runway.
4. June 1966 - he took off from a closed runway. His licence was suspended for 30 days.
5. August 1969 - the pilot entered the circuit below the height of the tower window "did some wild turns over and around the airport, ignored a red light, came dangerously close to other traffic, did a low pass over a non-active runway, then cut off another aircraft on final before landing on the active". He received another 30 day suspension.
6. August 1970 - he had an accident. There are no details in the file.
7. September 1975 - while he was a Chief Controller, he was apparently involved in an illegal charter service. As in the previous case, there are no details in the Transport Canada file.
8. October 1975 - the pilot departed "without a green light with other Nordo traffic and airline type traffic on final". He received his third 30 day suspension.
9. January 1976 - the pilot lost control in a steep turn and according to Transport Canada "pranged, injured himself".
10. March 1976 - his licence was once again suspended but there are no details in the file.
11. March 1977 - the pilot was evacuated by helicopter after his overdue aircraft was found. The file says "His aircraft had ski cable damage of some kind".

DISPOSITION

Having regard to the nature of the alleged infractions including the apparent danger of a mid-air collision and his prior record including three previous 30 day suspensions, the region requested that headquarters approve a suspension for a period of one year. It is also to be noted that the pilot was a tower controller.

In response to the request for a suspension of one year, headquarters replied as follows:

"As you know, requests of this nature are examined in Headquarters purely on the merits of the case. Since all decisions arising from such examinations are quasi-judicial in nature, and are therefore subject to appeal, the significance of evidence is compelling. Moreover, the enforcement resources employed by this Department should promote insofar as is possible, an atmosphere of compliance in which the person in question will be more predisposed to adhere to all relevant Regulations and Orders in future.

In regard to (the pilot) case, our examination leads to the conclusion that although the necessary evidence was available it has not been sufficiently investigated or documented on file to support a Headquarters approval of a suspension in accordance with Inspection Instructions 1.2.1.1.

Your attention is drawn to the following:

1. A certified true photocopy of the aircraft journey logbook showing the flight crew member(s) of CF-ECC for the flight from Bathurst, N.B. to Summerside, P.E.I. on July 29, 1979, would have been compelling evidence as to the identity of the pilot-in-command of the aircraft for the flight in question.
2. The alleged violation of section 210 is not supported by sufficient documented evidence to indicate:
 - (a) that the system was considered unapproved by a competent authority, i.e. an ACAE inspector, and
 - (b) that installation of such a system would, in the opinion of a competent authority, invalidate the Certificate of Airworthiness, and his conclusions or rationale for holding that opinion, and
 - (c) that such a system contained fuel and was attached to the aircraft fuel system, and
 - (d) that the fuel system had not in fact been certified airworthy in the aircraft logbooks.

3. The alleged violations of sections 504, 516(a) and (c), 518 and ANO V, No. 4, Section 4(1) are not supported by sufficient documented proof on file to conclusively indicate any wrongdoing on the part of the pilot-in-command of CF-ECC.
- a) The allegation that (the pilot) failed to familiarize himself with all available information pertinent to the flight, contrary to section 504 should be supported by documented evidence to indicate he did not check weather, Notams, etc; that his charts were inadequate or out of date, giving the dates and coverage of those charts found on board.
 - b) The allegation that (the pilot) failed to observe other traffic contrary to section 516(a) would require documented evidence to show that he did not see the other aircraft.
 - c) The allegation that (the pilot) failed to conform with or avoid the pattern of other traffic, contrary to section 516(c) requires documented evidence, as do all other allegations, as to the identity of the pilot-in-command of CF-ECC. Documented evidence, such as logbook entries, eyewitness statements or a voluntary confession would have been compelling.
 - d) The allegation that (the pilot) was responsible for creating a collision hazard contrary to section 518 requires documented evidence to indicate that a collision hazard did in fact exist, and that (the pilot) was responsible for that hazard.
 - e) The allegation that (the pilot) failed to file a flight plan, notification or itinerary contrary to ANO V, No. 4, Section 4(1) would require documented evidence to prove that his wife was not apprised of his itinerary.

It should be noted that the wording of section 516(f) renders it not applicable to military aerodromes such as Summerside.

In conclusion, the following alternatives are considered available to ACAR:

- 1) Should enforcement action in excess of that authorized to Regional officials still be considered appropriate under the circumstances, it is suggested that the requested evidence be obtained and sent to Headquarters with the appropriate covering correspondence, otherwise,
- 2) It is suggested that appropriate enforcement action pursuant to para 1.2.1.1 be taken by the appropriate Regional officials.

In either case, it is requested that Headquarters be advised of the outcome of this case."

(Emphasis added.)

Regional officials took exception to the statement that available evidence was not sufficiently investigated or documented. They pointed out that there was no question of the identity of the pilot who had been observed by the military, had signed a "Visiting Civil Aircraft Report", and had admitted his identity to the inspectors. The region continued its reply as follows:

"2. There may be a problem in semantics here. It is our understanding that if a system is not 'approved' it may be considered 'unapproved'. We can find no record of a five gallon outboard-motor fuel tank connected to the nose tank of a J-3 Cub by a system of neoprene tubing and tape being an 'approved' modification of the aircraft's fuel system.

We feel that a Civil Aviation Inspector is to be considered a 'competent authority' in deciding if a fuel system such as that found, and photographed in C-FECC would invalidate its Certificate of Airworthiness. The 'auxiliary' fuel tank did contain fuel. It was connected to the aircraft fuel system. (The pilot) admitted to Inspector Carter that he had installed it and that it had not, and indeed could not, be certified as airworthy. There was no entry in the journey logbook checked by Inspector Carter to cover the installation of the 'unapproved' auxiliary fuel tank although the log did contain several certifications covering 100 hour inspections. If need be, the statement we intend to solicit from Inspector Carter will so attest.

3. (a) We must concede that the allegation of a Section 504 violation is very thin and impossible to prove. It was never intended that our case against (the pilot) would stand on that charge, and in all probability it would have been dropped in any letter of suspension sent to him. We cannot envisage what sort of 'documented evidence' could ever be produced to indicate that a pilot did not check the weather.

(b) The same applies to Paragraph (b) in that it would be impossible to prove that a pilot did not see another aircraft.

(c) Presumably the statement expected from Inspectors Carter and Bennett will suffice in establishing that (the pilot) was the pilot-in-command of C-FECC.

(d) We do not know how close an aircraft must come to another to create a collision hazard. We thought the brief statement from the pilot of DVT along with the report from Summerside Tower would suffice.

(e) Again we must concede that an allegation that a pilot failed to file a flight notification is almost impossible to prove. Perhaps the 'voluntary confession' of 20 September, 1979 signed by (the pilot) that he informed his wife and daughter he would be returning home Saturday or Sunday would suffice in view of the fact that (the pilot) did not arrive in P.E.I. until late Sunday evening. Of course there is no way of proving that (the pilot) did not update his 'flight itinerary' with his wife or some other person.

We agree with your observation that Section 516(f) is not applicable to military aerodromes. It must be that there are not enough controlled aerodromes around to make it worthwhile to improve the wording of that section as it has not changed in many years.

With the submission of this memo along with the statements of Inspectors Carter and Bennett, we will rest our case. If the evidence warrants it we feel a suspension of (the pilot's) pilot licence is in order. If the evidence does not warrant a suspension then none will be assessed. We cannot abide by the principle of calling for a little suspension because we have only a little proof."

(Emphasis added.)

It was also the opinion of the airworthiness inspector that "the Certificate of Airworthiness must be considered 'not in force' during the period of time the fuel system was installed".

Ottawa finally ruled as follows:

"Although it is agreed that strong deterrent action is required in this instance, upon careful examination of the supporting documents contained on both Regional and Headquarters files, a six month suspension is considered to be sufficient, being six times the period of any previous suspension. Accordingly a suspension of six months is approved.

It is understood that the established violations are:

Air Regulations

- s. 210 - flying an aircraft in respect of which the Certificate of Airworthiness was not in force, due to the installation of an unapproved fuel system.
- s. 516(b)
(CRC 521(b)) - failing to conform with the pattern of other air traffic in operation.
- s. 518
(CRC 523) - creating a collision hazard with aircraft C-GDVT.
- ANO V. No. 4, - failing to file a flight plan or notification when conducting a Section 5 VFR flight to a military aerodrome.
(CRC c. 45)

A completed enforcement report and copies of any subsequent correspondence to (the pilot) are required by LICR."
(Emphasis added.)

The pilot's licence was thereupon suspended for a period of only six months.

COMMENT ON CASE STUDY NO. 3

The response of headquarters for requested approval of the suspension of the pilot's licence was, in my respectful opinion, quite incomprehensible. There was no question of the sufficiency of the evidence of the identity of the pilot in this case. As was noted, he was observed by military personnel, had signed the "Visiting Civil Aircraft Report" and admitted that he was the pilot to the inspectors. To suggest that it was necessary to have documentary proof of identity from the pilot's own journey logbook, under such circumstances, demonstrated that the author of the response had no knowledge of what constitutes evidence. To suggest that it was also necessary to have the pilot's own documentation that he did not check the weather and that he did not see the other aircraft does not really make sense.

Notwithstanding the contrary view of headquarters, the evidence of the tower controller and of the pilot of the other aircraft clearly indicated that there was a collision hazard.

With respect to the airworthiness of the aircraft, there was no reason to question the opinion of the inspectors, and the suggestion that proof was necessary that the fuel system had not in fact been certified airworthy in the aircraft logbooks indicated a lack of knowledge of airworthiness practices. Obviously, the unique fuel system discovered in the aircraft had not been submitted for inspection, and if it had, the aircraft would never have been certified as airworthy.

The ultimate ruling that a suspension of only six months would be permitted because it was six times greater than any previous suspension does not appear to be logical. As has been noted, this pilot had already been suspended four times, on three occasions for 30 days and on one occasion for a non-specified time. He was also a tower controller.

If the facts were as the regional enforcement specialists believed them to be, the infractions disclosed were of the gravest nature and created a collision hazard. This, coupled with the very lengthy number of infractions already recorded against the pilot, called for severe disciplinary action. One would have thought that serious consideration would have been given to a cancellation of this pilot's licence, and the one year suspension recommended by the region could hardly have been said to be unfair.

It is to be noted in the response of headquarters to the request for suspension, the following observation was made:

"Moreover, the enforcement resources employed by this Department should promote insofar as is possible, an atmosphere of compliance in which the person in question will be more predisposed to adhere to all relevant Regulations and Orders in future."

Although there is considerable merit in seeking to obtain voluntary compliance, without disciplinary action, in those cases where there is reason to believe that it would be successful, such an approach cannot be resorted to in every case. In this case it was apparent that there was no predisposition on the part of the pilot to adhere to all relevant regulations, and stronger disciplinary action was appropriate. Furthermore, in my opinion, the region was clearly correct in stating that:

"If the evidence does not warrant a suspension then none will be assessed. We cannot abide by the principle of calling for a little suspension because we have only a little proof."

It is also apparent that the nature of the proof required by headquarters for disciplinary action is quite unrealistic. This case study further brings into serious question whether it is advisable to continue to require headquarters' approval for disciplinary action in cases such as this.

4. GOLFE AIR QUEBEC LIMITEE, BAIE COMEAU, QUEBEC

BACKGROUND

Golfe Air Quebec Limitee was a small carrier operating in the Quebec Region and supplying service between the north and south shores of the St. Lawrence in Eastern Quebec. On January 4, 1977 an inspector from ASI Section of the Quebec Region reported that the company was carrying out a hazardous operation and listed the following specific complaints:

"a) Two engines failed during operations in the last month;

- b) Maintenance is poorly carried out;
- c) J.P. Leblanc, Chief Pilot, had his medical renewed by someone else in his name;
- d) Operations Manager under the influence of alcohol on a regular basis;
- e) Aircraft operating VFR in IFR weather conditions (BN-2);
- f) Aircraft operation in IFR weather conditions with unserviceable instructions (DC-3); and,
- g) DC-3 carrying 30 Pax etc. etc. etc."

Golfe Air had not been previously inspected since May 22, 1975.

DISPOSITION

Following further inspections, it was decided to conduct a full audit of Golfe Air's commercial air services with a six-member inspection team headed by Mr. Jean Daniel Wagner. The audit was carried out between November 20, 1978 and November 24, 1978. The report contained a very lengthy list of infractions and violations including failure to comply with the Operating Manual, irresponsibility on the part of the Chief Pilot, below limit flying, improperly maintained aircraft, false entries in the journey logs, over-loading, lack of training, lack of surveillance, poorly equipped aircraft, and poor management. The principal recommendation of the audit team was the immediate suspension of Golfe Air's operating certificate.

On December 21, 1978 Mr. Wagner forwarded the report of the audit team to headquarters and advised headquarters of a proposed monitoring of Golfe Air every 15 days for the ensuing three months with the possibility of suspension of the operating certificate in the event that the monitoring did not show any substantial improvement. He concluded his memorandum as follows:

"Please find enclosed the report of an audit of the subject operator carried out at Baie Comeau on November 20th to 23rd, as well as copy of the follow-up letter to the operator.

Since there is a possibility of Operating Certificate suspension, and Operating Certificate number 3106 is for a Class 2 service, your concurrence of the action taken and future suspension action is required."

On January 8, 1979 headquarters responded with the following memorandum:

"Reference is made to your memorandum of December 21, 1978, concerning the audit of the above operator at Baie Comeau and the possible suspension action of the Class 2 air service Operating Certificate.

We support your action taken, however, in view of the airworthiness inspection planned every fifteen days for the next three months it may be worthwhile to monitor these inspections to see if there is any improvement before final recommendation for suspension is made."

The Regional Office apparently interpreted the response as a rejection of its authority to take future suspension action, and Golfe Air continued to operate.

Throughout this period, complaints from Golfe Air passengers were lodged with Transport Canada. One of such complaints was that of a passenger who wrote to Transport Canada of her experiences on a flight on October 2, 1978 as follows:

"On take-off, the door of the aircraft opens

Return to airport

Close the door

New take-off

The door opens a second time

Return to airport

Some passengers wish to leave the aircraft

Because they are afraid

The captain objects - convinces them

Stay on board: 'We'll fix it up'

Wants to tie the door down with seatbelts

Belonging to a seat occupied by a passenger - who refuses (afraid!)

The door is tied down to the floor

Take-off for Lac Ste-Anne 130 miles north."
(+)

On October 26, 1979 the following letter was sent to Transport Canada from the Air Transport Committee of the Canadian Transport Commission:

"In May of this year, the Air Transport Committee of the Canadian Transport Commission held a Public Hearing at Baie Comeau, Quebec, in the matter of an application by Air Satellite for authority to operate commercial air services.

During the course of the Hearing, evidence was entered which reflected adversely against the manner in which aircraft are being operated by Golfe Air Quebec Limitee. More particularly it was said that aircraft are being operated with improperly secured doors; improperly secured cargo on combination flights resulting in damage to freight and express items; and ailerons locked in position. In addition numerous complaints were registered during the hearing as related to icy floors, unheated cabins, etc.

As matters of this nature more properly fall within the jurisdiction of the Department of Transport, the Committee has instructed me to send you a copy of the transcript of the Hearing for whatever action you may wish to take."

(Emphasis added.)

Upon receipt of this letter, on November 6, 1979 headquarters wrote to the region as follows:

"In May 1979, the Air Transport Committee of the Canadian Transport Commission held a public hearing at Baie Comeau, Quebec, in the matter of an application by Air Satellite for authority to operate commercial air services.

During the course of the Hearing, evidence was entered which reflected adversely against the manner in which aircraft are being operated by Golfe Air Quebec Limitee. More particularly it was said that aircraft are being operated with improperly secured doors; improperly secured cargo on cargo/passenger flights resulting in damage to freight and express items; and ailerons locked in position. In addition numerous complaints were registered during the Hearing as related to icy floors, unheated cabins, etc.

We are enclosing a copy of the transcript of the Hearing for your information and action as you may deem necessary. Please keep this office advised."
(Emphasis added.)

The Quebec Region forwarded the following short reply to headquarters:

"Reference your memorandum dated November 6th, 1979, the items referred to were detected during an audit held November 20th to 23rd, 1978, a copy of which was referred to your office. Our memorandum dated December 21st, 1978, refers.

Breach of Air Regulations noted were referred to QCAR with the reply that they were unable to proceed any further at that time due to a lack of personnel in enforcement.

We are planning to carry out an inspection in the near future.

Consequently, no further action is contemplated at this time."

Prior to the public hearings of this Commission in Quebec City during which the case study of Golfe Air was to be publicly aired, Mr. Russ Thatcher and Mr. Pierre Menard, consultants of the Commission previously referred to, conducted a field investigation of Golfe Air's operations. They concluded that the infractions and unsafe practices were still continuing. Shortly before the public hearings held in Quebec City, the certificates of airworthiness for Golfe Air aircraft were suspended, resulting in a shutdown of its operations. The carrier service provided by Golfe Air was subsequently undertaken by another carrier.

COMMENT ON CASE STUDY NO. 4

In this case there appears to have been a complete breakdown in the enforcement process. Notwithstanding the recommendation of the audit team for suspension of the operating certificate, it was determined that the carrier be monitored every 15 days for a period of three months, with consideration of the suspension of the operating certificate deferred. When headquarters indicated that the determination of the question of the suspension of the operating certificate should await continued monitoring, the region appears to have considered such response a rejection of its recommendations. Although continued monitoring did not appear to disclose any improvement, the question of suspension was not pursued by the region.

When the Air Transport Committee drew the attention of Transport Canada to the continued unsatisfactory nature of Golfe Air's operations, the region contented itself

with a reminder to headquarters that conditions noted by the Air Transport Committee had already been detected by the region which had already forwarded that information on to headquarters.

When invited by headquarters to take action, the region failed to do so on the basis of a lack of manpower. It would appear that the real reason for the failure of the region to take action was the friction between headquarters and the region. On the basis of the information available to the region by reason of its many inspections, it is difficult to understand how lack of manpower could be used as an excuse for permitting the carrier to carry on under the very apparent unsafe conditions. It can only be assumed that action was finally taken because of the inspection made by the consultants of the Commission shortly before the public hearings of the Commission scheduled for Quebec City, at which time this matter was one of the items to be aired.

Under the circumstances, it was apparent that headquarters should have pursued the matter more vigorously and the region should have taken enforcement action.

5. TOMAHAWK AIRWAYS LTD., COCHENOUR, ONTARIO

BACKGROUND

Tomahawk Airways Ltd. is a carrier servicing many small communities in Northern Ontario. The Ministry of Transport's record indicated that from 1974 to 1978 Tomahawk Airways Ltd. had committed numerous breaches of the Aeronautics Act, Air Regulations and Air Navigation Orders. The record disclosed that over the years the carrier had operated over-loaded aircraft, improperly maintained aircraft, and operated outside the permitted scope of its licence. On numerous occasions the companies that had contracted to provide maintenance services to the aircraft of Tomahawk Airways Ltd. terminated their contracts as they found it impossible to ensure that the required maintenance was performed.

As early as 1974, following the investigation of an accident in March of that year of a Grumman G73, an aircraft owned and operated by Tomahawk Airways Ltd., in which the pilot and two passengers were killed, the accident investigators made the following findings:

"The aircraft did not achieve its published climb performance after takeoff.

The pilot overestimated the performance capability of the aircraft.

The carrier was not in compliance with the standards laid down in Air Navigation Order Series 7, Number 3 in respect of pilot training and checking, aircraft dispatch, and operational control.

The Ministry of Transport had not adequately monitored or enforced standards applicable to this carrier."
(Emphasis added.)

In 1975, following the investigation of an accident on February 5, 1975 of a Beech 18 aircraft, also owned and operated by Tomahawk Airways, in which the pilot and one passenger were killed, the accident investigators made the following findings:

"It was clear that the Ministry of Transport had not enforced the application of its operational and maintenance standards, as described in Air Navigation Order Series VII, No. 3 and other documents. There was no evidence that the operator had been required to meet the standards as a condition of the operating certificate, or that there had been regular inspections to monitor compliance.

The crash was due to failure of the left engine and reduced power capability of the right engine, both related to inadequate maintenance and inspection.

The Ministry of Transport had not exercised adequate control over the application of its operating and maintenance standards."
(Emphasis added.)

The record disclosed continued efforts to obtain compliance but to no avail.

On December 29, 1976 the officials of Tomahawk Airways Ltd. met with the regional officials of Transport Canada, and at that time the company did not have an approved Chief Pilot, an Operations Manager or an approved maintenance system, all of which were necessary for Tomahawk Airways Ltd. to maintain an operating certificate.

DISPOSITION

On April 27, 1977 the Regional Controller, Civil Aviation, wrote the following memorandum to Ottawa, to which reference was made in Volume 1 of this Report for other

purposes, seeking approval for the suspension of Tomahawk Airways' operating certificate.

"During a meeting on December 29, 1976, held at this Regional Office with officials of Tomahawk Airways Ltd. and Inspectors from Transport Canada, the status of Tomahawk Airways operations was discussed and recommendations made to ensure they were complying with Air Navigation Order Series VII, No. 3. At that time, they did not have an approved Chief Pilot or Operations Manager, nor an approved maintenance system. . . .

Although letters were submitted December 30, 1976, by Tomahawk Airways appointing Mr. K. Leishman as Operations Manager and Mr. W. Buyze as Chief Pilot, no resumes were submitted for approval. Repeated attempts to obtain these were unsuccessful and a final registered letter was sent April 7, 1977 to the company. . . .

Legal charges were laid against the company at the end of March for unsafe loading conditions discovered during a field trip. After this action, Mr. W. Buyze left the company, and also a letter was received April 12, 1977, from Tomahawk Airways appointing Mr. C. Brotherston as Operations Manager. A resume of Mr. Brotherston is on file. However, the company still does not have an approved Chief Pilot. . . .

Since the meeting in December, Tomahawk Airways utilized Perimeter Aviation from January 12, 1977 to March 14, 1977, for their maintenance and then transferred to St. Andrews Airways. . . . No full time engineer is utilized by Tomahawk Airways as recommended during the meeting.

The lack of proper management and supervision of Tomahawk Airways Ltd. is contributing to an unsafe condition, and authority is requested for a suspension of their Operating Certificate for a period of 14 days, unless further action is taken by the company to hire, document, and utilize qualified personnel."

(Emphasis added.)

The telex response from Mr. R. L. Bolduc, Director, Aeronautical Licensing and Inspection Branch for headquarters, was as follows:

"OCA WINNIPEG

DLI 4 HAVING CAREFULLY REVIEWED YOUR LETTER APRIL 27, 1977, AND SUPPORTING DOCUMENTATION TOMAHAWK AIRWAYS, IT IS NOT CONSIDERED THAT YOU HAVE A STRONG CASE FOR OPERATING CERTIFICATE SUSPENSION AS PROVIDED UNDER SECTION 703(A) OF THE AIR REGULATIONS. THERE MAY BE A CASE FOR CHARGES UNDER THE PROVISIONS OF AIR NAVIGATION ORDER, SERIES VII, NO. 3. IN ANY EVENT SUSPENSION ACTION SHOULD NOT BE TAKEN UNTIL (1) YOU SATISFY YOURSELF IN CONSULTATION WITH YOUR DEPARTMENT

OF JUSTICE REPRESENTATIVE THAT SUSPENSION ACTION CAN BE SUCCESSFULLY DEFENDED, IF NECESSARY, IN THE FEDERAL COURT; (2) YOU FULLY CONSIDER THE POSSIBILITY OF EMBARRASSMENT TO THE MINISTER AND ANY OTHER POTENTIAL POLITICAL IMPLICATIONS WHICH MAY RESULT FROM SUSPENSION ACTION; (3) YOU ARE PREPARED TO DEFEND YOUR ACTIONS AND JUDGEMENT IN THE EVENT OF POLITICAL REPRESENTATIONS OR APPEALS TO THE MINISTER OR OTHER SENIOR STAFF IN THIS REGARD; AND (4) THE OPERATOR IS GIVEN OPPORTUNITY TO SHOW CAUSE WHY THE PROPOSED ACTION SHOULD NOT BE TAKEN. IN THIS REGARD 1.2.1.3 INSPECTION INSTRUCTIONS SHOULD BE USED FOR GUIDANCE."

In response to Mr. Bolduc's telex, the Regional Controller wrote the following memorandum, dated June 17, 1977, to the Director General, Civil Aviation, in Ottawa protesting the lack of headquarters' support of the recommended disciplinary action:

"Tomahawk Airways

Reference is made to our recent request to LIOC for Regional authority to temporarily suspend the Operating Certificate held by the subject Company. . . . We are dismayed at the lack of support from DLI as contained in their reply, telex DLI 4 dated May 12, 1977. . . .

In part the telex states, 'it is not considered that you have a strong case for Operating Certificate suspension...' On the contrary we have a very strong one considering the company's apathy towards meeting the requirements of ANO VII, No. 3 with respect to proper management, supervision and maintenance.

This apathy dates back to March 1975 in a letter to the Chairman of the Air Transport Committee from Mr. John M. Reid, MP, Kenora Rainy River, complaining about the standard of performance of Tomahawk Airways, as a result of an air crash, as well as, lack of Transport Canada attention to this airline. . . . This was brought further into the open by an accident investigation Report (C 50013 Beech 18, CF-FXH) on February 7, 1975, which identified that Transport Canada had not enforced operational and maintenance standards, as well as, a lack of adequate control by the company of its operating and maintenance standards. . . . The resulting court action in October 1976 resulted in a conviction of the company and the Owner/Manager. The attached outline of court action outlines the convictions which resulted from this accident as well as, a further violation and conviction. . . .

In support of our statement that we have a strong case is correspondence to the company, their replies or lack thereof which has been going on since January 1976. . . . In our letter to the Company dated April 7, 1977, we made our final request to the company to nominate qualified personnel within fourteen (14) days. This was sent as a result of pure frustration on our part

to get this company into line. Subsequently, we have received nominations from the Company for a new Operations Manager, Chief Pilot and a new maintenance contract company which now should meet the requirements we are looking for and the Operating Certificate suspension may not be required.

Due to our dismay of the telex reply, we feel that it was not justified considering the facts as presented. It is difficult to keep the morale of my inspectors at a keen level when they do not receive justified support in the course of their inspection duties. We have carefully considered all four items as outlined in DLI's telex and are most prepared to face the implications which may result from such a suspension.

This matter was discussed with the Department of Justice and we received total support of Operating Certification suspension in fact they were amazed that we have tolerated a situation such as this for so long. In response to Item 2 we are fully aware of the ramifications of such action and are amazed that such a statement as an 'Embarrassment to the Minister.' In fact we could be 'embarrassed' to a far greater extent by omitting to discharge an obligation than by the act of doing so. If it could be shown that an accident occurred because we failed to enforce the Regulations and suspend an unsafe operator then we would stand in great peril of successfully being sued and quite properly so.

As far as the political implications are concerned one need only look to the political situation in Northwest Ontario and the burning question of 'Air Safety'. We stand to gain great credibility from such a suspension. We have evidence of two operators now - who by suspension now run a safe operation. They in fact admitted to us that they couldn't believe that Transport Canada would suspend an Operating Certificate. Northwest Ontario is once again in the spotlight with the recent crash of a DC 3 at Pickle Lake, Ontario.

In our normal course of duties we normally take legal action when infractions occur, and will pursue this route if it is an isolated incident. However, when a company such as Tomahawk Airways shows complete disregard for Regulations, court action may serve one purpose, but, in the meantime, the company can continue to operate while legal proceedings are in process. This can be upwards of one year's duration. As was the case with the original case involving the crash of the Beechcraft 18.

We recognize fully that we must be in a position to justify our actions and are prepared to face the music as necessary in the course of any regulatory activity, similarly we should be criticized if we don't carry our duties promptly and efficiently. The question is are we to seek full compliance with our Regulations and directives or are we to back off and allow commercial operators to operate without key personnel.

This is just another case where Regional authority for Operating Certificate suspension is required. If we cannot receive support from Headquarters, we cannot carry out our function as we are charged to do."
(Emphasis added.)

There does not appear to have been a direct response to the Regional Controller's memorandum, but the guidelines for the suspension of an operating certificate as set forth in Mr. Bolduc's telex reproduced above were reaffirmed by the Director General, Civil Aviation, on August 12, 1977 by his following memorandum forwarded to all Regional Controllers:

"Operating Certificate Suspension

Further to my letter dated February 1, 1977, to OCA with a copy to all Regional Controllers, Civil Aviation, the following procedure is an amendment to paragraph two of that letter and should be implemented immediately.

If, as a result of a Base Inspection, discrepancies are found in the operation, consideration must be given to laying charges under the Regulations in lieu of Operating Certificate suspension. In any event, recommendation for suspension should not be taken until:

(a) you satisfy yourself in consultation with your Department of Justice representative that suspension action can be successfully defended, if necessary, in the Federal Court;

(b) you fully consider the possibility of embarrassment to the Minister and any other potential political implications which may result from suspension action;

(c) you are prepared to defend your actions and judgement in the event of political representations or appeals to the Minister or other senior staff in this regard; and

(d) the carrier is given the opportunity to show cause why the proposed action should not be taken. In this regard, Section 1.2.1.3 of Inspection Instructions should be used for guidance.

Regional officials are requested to advise their staff on this procedure."
(Emphasis added.)

In light of the response from headquarters, no immediate steps were taken to suspend the operating certificate of Tomahawk Airways Ltd. although the unsatisfactory conditions prevailed. Warning letters setting out continued infractions were sent to Tomahawk Airways Ltd., without even the courtesy of a response.

On May 29, 1979 St. Andrews Airways, which had assumed the responsibility for the maintenance of Tomahawk Airways Ltd., wrote Transport Canada in Winnipeg as follows:

"I am writing this letter in response to your letter file number 5258-161 (GCAE) dated May 25, 1979.

We have lost the ability to totally control the maintenance which Tomahawk Airways Ltd. aircraft receive. I believe until we regain the control needed to satisfy the regulations as set out in the Tomahawk Maintenance Manual St. Andrews Airways can no longer be responsible for the maintenance and certification of their aircraft."

As previously noted, it was a condition of the operating certificates that Transport Canada receive the necessary documentation as to the maintenance of the carrier's aircraft. Mr. R. W. Slaughter, then Regional Superintendent of Air Regulations for the Central Region, testified that he did not know about this breach of the terms of the operating certificate that apparently had continued for over a period of one year.

Continued infractions were noted, and eventually on February 20, 1980 the operating certificates of Tomahawk Airways Ltd. were suspended for the reasons and subject to the conditions both set forth in the following letter, dated February 28, 1980, to Tomahawk Airways from the Regional Controller, Civil Aviation:

"I refer to Mr. Wayne E. Smoker's letter, dated February 21, 1980 and our letter to Tomahawk Airways Ltd. dated February 6, 1980, regarding the allegation that commercial operations were being conducted in violation of Chapter 2, Section 703, of the Consolidated Regulations of Canada. (formerly Section 702 of the Air Regulations.)

Please be advised that Mr. Smoker's letter of explanation, and reasons for committing the violations are not acceptable.

Evidence shows that this was not an isolated infraction in that unauthorized IFR commercial operations were conducted on other occasions. The IFR operation in question was conducted on January 18, 1980, in spite of the fact that in our letter dated December 13, 1979, the Company was advised that night and IFR authority could not be issued until certain specified requirements were met. It is noted the Company has not yet met the requirements for issue of IFR authority.

Of particular concern is the fact that some of the unauthorized flights were not conducted in a safe and proper manner which indicates management is not exercising adequate operation control. Records show that on January 18, 1980, an IFR flight was made to Deer Lake Airport, Ontario. Deer Lake Airport has no navigation aids which would permit safe IFR operations, to or

into the airport. Safety was further compromised by the fact that Sandy Lake Airport was filed as an alternate even though Tomahawk Airways Ltd. does not have an approved company IFR approach at Sandy Lake and meteorological forecasts for the airport are not available. Sandy Lake Airport is not approved as an IFR alternate for any carrier.

After reviewing the total evidence, I am satisfied that Tomahawk Airways Ltd. did conduct IFR commercial operations in violation of the Operations Specifications on page two of the Company's Operating Certificates. I am also satisfied that the unauthorized IFR commercial operations were not conducted in a safe and proper manner in accordance with the standards and procedures outlined in Chapter 22 of the Consolidated Regulations of Canada (formerly ANO Series VII, No. 3) and as required by Chapter 2, Section 703, of the Consolidated Regulations of Canada (formerly Section 702 of the Air Regulations).

Chapter 2, Section 704 of the Consolidated Regulations of Canada (formerly Section 703 of the Air Regulations) empowers the Minister of Transport to suspend an Operating Certificate, when, on reasonable grounds, he believes the holder of the Operating Certificate has contravened any operations specifications, any provision of the Regulations, or has failed to conduct the commercial air service in a safe and proper manner. Pursuant to this section, the undersigned has been authorized by the minister to exercise these powers. Accordingly, the privileges authorized by Operating Certificates Numbered 4692, and 3078, dated the 22nd of October, 1979, issued in the name of Tomahawk Airways Ltd. are hereby suspended.

Reinstatement of the suspended Operating Certificates will be considered when Tomahawk Airways Ltd. submits written assurance that future commercial operations will be conducted in a safe and proper manner, in accordance with operations specifications, and the applicable regulations. Written assurance will also be required from Mr. Smoker, the Chief Pilot, that he meets the requirements of the Consolidated Regulations of Canada, Chapter 22, Schedule A, Section 1, sub-section (5) (a) and (b) (formerly Schedule A, Section 1, sub-section (5) (a) and (b) of ANO Series VII, No. 3) which requires that every chief pilot;

- a) know the contents of the air carrier's operating certificate, operations specifications and the Operations Manual; and
- b) know the provisions of the Air Regulations and Air Navigation Orders necessary for the proper performance of his duties.

In his letter dated February 21, 1980, Mr. Smoker, the Chief Pilot indicated that he is not familiar with the Regulations governing operating certificates, and operating specifications. For this reason reinstatement of the operating certificates will also require that the Chief Pilot be briefed by Mr. J. Evancio, Regional Superintendent, Air Carrier Operations, on the Regulations applicable to commercial air services. The briefing can be arranged by contacting Mr. Evancio directly at telephone number 204-949-6374. It is recommended the Operations Manager also attend this briefing." (Emphasis added.)

On March 4, 1980 the President of Tomahawk Airways Ltd. attended at the regional office of Transport Canada in Winnipeg with the Chief Pilot, Wayne Smoker, and as was contemplated in the letter, dated February 28, 1980, were briefed on the regulations applicable to commercial air services.

By letter, dated March 4, 1980, the President of Tomahawk Airways Ltd. delivered the following undertaking to the Regional Superintendent, Air Carrier Operations at Winnipeg:

"With reference to your letter of Feb 28, 1980 and further to our conversation of this date.

You have our complete assurance that future commercial operations will be conducted in a safe and proper manner in accordance with the operations specifications and applicable regulations."

On March 5, 1980 the Chief Pilot, Wayne Smoker, delivered a similar undertaking by the following letter to the Regional Superintendent, Air Carrier Operations, Winnipeg:

"Reference our discussions on March 5, 1980 regarding your letter dated February 28, 1980.

This will confirm that I understand the regulations as they apply to operating certificates, operations specifications and IFR/VFR/night commercial operations.

You have my assurance that future commercial operations will be conducted in a safe and proper manner in compliance with the regulations."

On the basis of these two undertakings, the operating certificates were reinstated by the following telex, dated March 5, 1980:

"THIS WILL CONFIRM THE REQUIREMENTS FOR REINSTATEMENT OF YOUR OPERATING CERTIFICATES HAVE BEEN MET, THEREFORE, OPERATING CERTIFICATES NUMBERED 4692 AND 3078, DATED OCTOBER 22, 1979 ISSUED IN THE NAME OF TOMAHAWK AIRWAYS LTD. ARE HEREBY REINSTATED."

SEQUEL

On March 24, 1980 a Cessna 402B owned and operated by Tomahawk Airways Ltd. crashed at Deer Lake, Ontario. The pilot and five passengers were killed. The pilot was Mr. Smoker. The preliminary report of the accident investigators described the occurrence as follows:

"80-C00020

Cessna 402B

CF-EIA

DATE: 24 March 1980 1501 CST

OPERATION: Specific Point

DAMAGE: Destroyed

PLACE: Deer Lake, Ont.

52/39N 94/04W

LOCALE: Dirt runway 2250' by 75-100', 1002' asl

WEATHER: Wind WNW 2 kts, vis 15+, cloud 12,000 broken, temp 20C

PILOT: Airline Transport

TOTAL HOURS: 5822

ALL

644

ON TYPE

LAST 90 DAYS: 174

ALL

174

ON TYPE

CASUALTIES: Crew: 1 fatal; pass: 5 fatal, 3 serious

OCCURRENCE: The company had been operating the aircraft into the partially completed airstrip throughout the late fall and winter months. Normally the strip is relatively smooth with a total usable length of over 3,000' including overrun. The surface was a mixture of sand and silt as no gravel had yet been added. During below freezing temperature periods the runway is hard and usable. On the day of the accident the area was experiencing an unusual warm spell with temperatures well above freezing in the afternoon. The runway surface had thawed during the day of the accident leaving pools of water and mud to a depth of 2 inches throughout the entire length. The aircraft had landed in the afternoon on the soft runway surface. The pilot had noted the runway condition and had remarked that this would be his last flight into the strip with the 402. The pilot then took on eight passengers and proceeded to take off. Tire marks indicated that the aircraft had remained on the ground throughout most of the runway length and became airborne after contacting a bumpy area just short of the runway end. The aircraft did not remain airborne but mushed into deep snow beyond the end of the runway dragging the undercarriage in the snow for hundreds of feet. Just before reaching the bordering treeline the aircraft became airborne again and struck the heavy trees at an estimated speed of 80 mph. Fire broke out immediately. Three female passengers managed to escape through an open door. Evidence indicates that the aircraft exceeded its maximum allowable takeoff weight by over 500 pounds. (Emphasis added.)

1. Overrun.

ICAO FACTORS

64A35	Pilot - Selected unsuitable area for take-off, landing, taxiing.
88ADH	Miscellaneous Acts - Ran off runway end.
64A16	Pilot - Failed to obtain/maintain flying speed.
64A20	Pilot - Failed to follow approved procedures, directives, instructions, etc.
88A76	Miscellaneous Acts - Improperly loaded aircraft - weight - and/or C. of G.
80ABA	Aerodrome Conditions - Wet runway or strip or oil on movement area.
80ABB	Aerodrome Conditions - Water/Ice/Slush on runway.
80ABL	Aerodrome Conditions - Soft runway.

SAFETY PROPOSAL

Actioned."

HEADQUARTERS' RATIONALE

As noted in Volume 1 of this Report, Mr. P. E. Arpin, in referring to the guidelines which made reference to political embarrassment, explained that he did not mean political embarrassment in a partisan sense, but rather as he stated:

"... you just don't walk in and suspend an operating certificate unless you do your work properly and you're prepared to defend your actions with anybody. There's nothing more embarrassing. I know if I were a Minister there would be nothing more embarrassing to me than to be standing in the House of Commons answering questions from an opposition MP questioning action taken by somebody to whom I had delegated powers and after looking into the matter having to reverse the decision taken because the suspension was unjustified. That is all that Mr. Bolduc was trying to say."

As was also noted earlier, a limited delegated authority to suspend operating certificates was granted to the regions, and the following guidelines were set forth which superseded Mr. Arpin's earlier memorandum:

"DLI 7: FURTHER TO DLI 6 DATED NOV 24/77 A DELEGATION OF AUTHORITY TO REGIONAL CONTROLLERS, CIVIL AVIATION AND A REVISION TO SECTION 703 OF THE AIR REGULATIONS WILL BE GAZETTED SHORTLY. UPON RECEIPT OF NOTIFICATION FROM THIS HEADQUARTERS OF THE EFFECTIVE DATE OF THESE CHANGES, REGIONAL CONTROLLERS, CIVIL AVIATION ARE AUTHORIZED TO SUSPEND ANY OPERATING CERTIFICATES FOR CLASS 3, 4, 5, 6, AND 7 COMMERCIAL AIR SERVICES PURSUANT TO SECTION 703 OF THE AIR REGULATIONS SUBJECT TO FOLLOWING GUIDELINES (1) THE CARRIER HAS BEEN GIVEN OPPORTUNITY TO SHOW CAUSE WHY PROPOSED ACTION SHOULD NOT BE TAKEN AS PER PARA. 2.6.8.2 OF THE AIR CARRIER CERTIFICATION MANUAL. (2) YOUR DECISION IS TAKEN IN CONSULTATION WITH YOUR DEPARTMENT OF JUSTICE AGENT AND CONSIDERED TO BE DEFENSIBLE IN THE EVENT OF AN APPEAL. (3) CIRCUMSTANCES ARE SUCH THAT SUSPENSION ACTION IS NOT ONLY WARRANTED BUT PREFERABLE TO COURT ACTION."

In explaining the difficulties that arise in considering the suspension of an operating certificate, Mr. Arpin set forth the following factors in a memorandum, dated December, 1977:

"... the suspension of an Operating Certificate cannot be taken lightly because of the serious implications:

- a) it creates unemployment;
- b) it could disrupt an essential transportation service which the public expects as a matter of course, and
- c) if suspension action is taken and we are unable to justify the judgment used in initiating suspension action, the Minister would be placed in an embarrassing position if he had to set aside an earlier decision and face the possibility of legal action against the Crown for damages.

Accordingly, regions have traditionally been urged to exercise all other options at their disposal including actions in the Court against individuals who have contributed to the unsafe conditions in exercising the privileges of pilot and/or engineer licences also issued by this Department. There is a broader base in the Air Regulations for such a course of action which generally speaking, makes it less difficult to obtain convictions.

Because of the broad implications involved in the suspension of an Operating Certificate, and the difficulty in obtaining a conviction and/or defending suspension action in the Courts, our philosophy is that it should only be used as a last resort after all other courses of action have proved to be ineffective."

Mr. Don Lamont, DLI, was questioned by Commission counsel with respect to the enforcement procedures relating to Tomahawk Airways Ltd., and a portion of his testimony is reproduced below:

"MR. SOPINKA

Q . . . My question really is this: we use Tomahawk Airways as an outstanding example of a breakdown in the system. You haven't responded to it. I am just wondering have you looked into the question as to how is it that that system broke down, the normal system broke down in that example which seemed to be a very serious one, because very shortly following that there was a very fatal accident at Deer Lake?

A Well, these few fall between the cracks, but certainly one of the reasons, that it was touched on a few times, that we set up the Air Carrier Division in the Region and delegated the authority and increased the staff, not only of the Air Carrier Inspectors, but the Technical Inspectors, was to increase our surveillance of the air carrier population and to be more effective in that area.

At that particular time this had not taken place and now we hold the Regional Controller and the Regional Superintendent of Air Carrier fully responsible for the delegated authority they have.

. . . I can't, and I won't make excuses for that sort of action. All I can say is that I tend to agree with you, I do agree with you that that type of action doesn't seem to be proper and certainly we had a case, I guess last week, where an OC was suspended when a request was made to me for suspension which was granted. In the afternoon they had rectified it and they requested that the OC be reissued which I denied."

COMMENT ON CASE STUDY NO. 5

In 1974 and again in 1975, accident investigators concluded that a contributing cause to two fatal accidents of aircraft owned and operated by Tomahawk Airways was by reason of the carrier failing to comply with Air Navigation Order Series VII, No. 3, and that in each case the Ministry of Transport had neither adequately monitored nor enforced the operating and maintenance standards of the carrier. These findings obviously required the close monitoring of the carrier and effective enforcement action if future violations were disclosed. Notwithstanding evidence of the continued violation of the relevant safety rules, no administrative action was taken until February, of 1980.

The request for suspension of the operating certificate made by the region in April, 1977 was rejected by headquarters. One of the grounds advanced for rejecting the request was that "It is not considered that you have a strong case for operating certificate suspension". In light of the past record of this particular carrier as disclosed in Transport Canada's files, only a portion of which has been reproduced, it is difficult to understand the basis upon which such comment was made. With respect, I think it is clear that insofar as the merits are concerned a very strong case was made out for the recommended action.

The rejection of the recommended action in this case, as in many other cases referred to and reviewed by the Commission, fully supports the complaints from the regions that headquarters' refusal to support regional recommendations inhibits them from carrying out their responsibilities. This is reflected in the memorandum from the Regional Controller, dated June 17, 1977, supra, when he concluded:

"This is just another case where Regional authority for Operating Certificate suspension is required. If we cannot receive support from Headquarters, we cannot carry out our function as we are charged to do."

This case study is further evidence that the review procedure carried out in headquarters of regional recommended disciplinary action is faulty and indicates a predisposition on the part of headquarters to resist disciplinary action by an unfounded assertion that a case has not been made out. This case, and many others like it, supports the view that there should be a greater delegation of authority to the regions in enforcement matters.

The record on file with Transport Canada disclosed ample warning of the necessity of enforcement action. What appears to be lacking is a procedure to make certain that problem areas clearly identifiable are given close scrutiny and enforcement action taken.

The case study also brings into question the validity of the guidelines set forth with respect to the suspension of an operating certificate. Admittedly, there are serious policy considerations in determining whether an operating certificate should be suspended. As noted by Mr. Arpin, there are serious consequences not only to the carrier but also to other persons affected where the operating certificate of a carrier is suspended. I would have thought, however, that aviation safety should be the paramount

consideration to which all other factors must yield. There may be violations by carriers of the relevant rules which may not bring about an immediate safety hazard. In such cases, it would be appropriate to consider action alternative to that of the suspension of an operating certificate. But if the basis of the complaint is that the carrier's operation is unsafe, it would follow, I would think, that suspension of a certificate would be the appropriate administrative action.

It appears to me that the present guidelines fail to emphasize that a suspension of an operating certificate will be resorted to in those cases where the carrier's operation, by reason of a deliberate disregard of the safety rules, poses a serious risk to the safety of its crew and passengers. The present guidelines, in my respectful opinion, place too much emphasis on collateral considerations. Enforcement agencies must act honestly and fairly on the information available to them and must act on the basis of the facts that they believe to be true. If having done so, it was determined subsequently that they were in error, there should be no reflection on the enforcement agency. Questions of political embarrassment to the Minister or political intervention by others should not arise under such circumstances, and, in any event, should be quite irrelevant in the determination of whether enforcement action should be taken.

It is, of course, axiomatic that the rights of the carriers must also be respected, and in the enforcement process leading to the suspension of an operating certificate, except in cases of emergency, every effort should be made to observe the principles of natural justice, and the carrier should be given the opportunity of meeting the case made out against it before the operating certificate is suspended. Tomahawk Airways certainly had more than ample opportunity to do so in this case.

There may be cases, however, in matters of extreme urgency where it would be appropriate to suspend temporarily an operating certificate without affording the carrier an immediate opportunity to make full answer and defence. In such a case, provision should be made for the right of a carrier to have an early review before a tribunal empowered to hear such matters. Such a tribunal should also be available to all persons against whom administrative action has been taken with respect to any licences or documents of entitlement held by them.

It is further to be observed that when suspension of the operating certificates of Tomahawk Airways was finally effected, the operating certificates were reinstated immediately, solely on the undertaking of the company and of the Chief Pilot to comply with the regulations and the terms of the operating certificate. The carrier determined the period of suspension by merely providing an undertaking. There was no audit or inspection made between the time of the undertaking and the reinstated certificates.

Having regard to the record of this particular carrier over many years and its demonstrated refusal to cooperate with the conciliatory efforts made by Transport Canada, something more was obviously required before reinstatement should have been granted. In future, I think it should be apparent that there should not be a reinstatement of an operating certificate without a preceding formal inspection and inquiry to determine that the aviation safety deficiencies which brought about the suspension had been corrected. If such precautionary steps had been taken in this case, the tragic sequel, which resulted in the death of the very pilot who had given the undertaking and the deaths of five passengers, might have been avoided.

6. ATHABASKA AIRWAYS LTD., PRINCE ALBERT, SASKATCHEWAN

BACKGROUND

Athabaska Airways Ltd. operates more than 50 aircraft from bases in Northern Saskatchewan. It is an active carrier with over 100 employees, and its aircraft log a total of 30,000 to 35,000 flying hours per year. Between March, 1976 and March, 1980, aircraft owned by Athabaska Airways were involved in 21 accidents, resulting in 16 fatalities and 13 serious injuries. It would appear that when two of the accidents occurred, the aircraft owned by Athabaska Airways had been leased to other companies.

In view of the number of accidents, there was considerable monitoring of the operations of Athabaska Airways by officials in the Central Region between the years 1977 and 1980. During that time the records of Transport Canada disclosed evidence of improper or inadequate maintenance, failure to comply with airworthiness directives and service bulletins, the operation of aircraft in IFR conditions without proper authorization, and other similar infractions. On most occasions, Athabaska Airways vigorously denied any impropriety on its part, or where any impropriety was admitted, explanations were

proffered. At the hearings, Athabaska Airways was very ably represented by Mr. James H. W. Sanderson, of the Bar of Saskatchewan.

In inquiring into this matter, as in the other case studies, it was not the purpose of the Commission to determine whether any violations had in fact taken place. The purpose of the case study was to inquire into how the enforcement agency carried out its task with the information gathered by it, including the response of the carrier. As has been previously noted, enforcement agencies must act honestly and fairly on the information available to them and on the facts that they believe to be true. In determining the adequacy of the enforcement action taken, I have accepted the conclusions arrived at by the enforcement agency, without in any way endeavouring to retry the matter and to determine whether the violations noted had in fact taken place.

During this period, certain judicial proceedings were initiated with respect to Athabaska Airways which are not germane. It was important, however, to review the administrative enforcement action taken in light of the evidence which was made available and the findings made by those responsible for initiating such action.

ADMINISTRATIVE ENFORCEMENT ACTION

On May 28, 1977 an Athabaska Airways MU2, a small twin-engined turboprop, departed Winnipeg on an IFR flight to Prince Albert, Saskatchewan. The aircraft crashed near Portage, Manitoba, killing all six occupants. This accident is the subject of litigation still pending, and I do not propose to go into the details of it. It would appear, however, that as a result of the accident the inspectors of the Central Region commenced an inquiry into the operations of Athabaska Airways, and a running battle ensued for several years between the inspectors and Athabaska management. The progress of the dispute is reflected in the files of the Central Region, from which I have selected only a few of the documents disclosing the nature of the matters in issue.

On June 20, 1979 an Air Carrier Inspector forwarded the following memorandum to CCAC (Regional Superintendent of Air Carriers of the Central Region):

"During the past six months the calibre of pilot proficiency and the hands on knowledge of the aircraft has made the training recorded by the subject company suspect. A cross check of aircraft journey log books with company training files has not been possible since pilots stationed in Prince Albert always seemed to have done their training in aircraft stationed in La Ronge.

On May 25, 1979, a pilot proficiency ride was carried out in the company's C-404. The company only has one C-404, therefore, both the aircraft journey log book and the pilot training record was available and compared. A copy of the aircraft journey log book is attached for the 17 - 25 May, 1979.

The entries in the journey log book sheet number 06169 for the 21st and 23rd of May, 1979, appear to have been entered to meet paper training requirements only. The attached sheets from the Prince Albert aeradio office confirms this; the aircraft did not fly locally on the 21st and 23rd of May, 1979.

The discrepancy was brought to the company's attention (Floyd Glass) after the check ride and the aircraft journey log book was requested. I was told that I could not have the log book. He stated that 'you had better not stir up a bunch of shit or we will go to Ottawa'.

Both the company Chief Pilot and the company President subsequently phoned the office (air carrier) and stated that they would provide a written explanation on the log book discrepancy.

The attached explanation and a copy of the log book correction was returned to this office as an explanation. The answer given does not address the question but rather substantiates the falsification of the aircraft journey log book.

For your consideration and action."
(Emphasis added.)

On July 6, 1979 another Air Carrier Inspector forwarded the following memorandum to CCAR (Regional Superintendent of Air Regulations of the Central Region):

"During a recent inspection of the above Company base at Prince Albert on June 26 - 28, 1979, the following violations were noted:

1. On the morning of June 28, 1979, the following aircraft were away from base on trips and the C of A, C of R, Weight and Balance, radio licences, and journey log books were left behind at base.
 - (a) C-GYHY, Bell 206B, flown by John Dugald McLean Gammage, YZC-145136;
 - (b) C-GFXA, C-310, flown by James Lee Smith, YZC-11471;
 - (c) C-GSJP, C-310, flown by Douglas Vernon Hunt, WGA-1285.

2. On January 29, 1979, Athabaska utilized Ernest Victor Yergens, WGC-7827, on a commercial flight on C-GJMP (C-404). Yergens has no record of training or proficiency ride on C-404. Photocopy of airbill attached.
3. On the 5, 13, 14, and 15 June, 1979, Athabaska utilized Ernest Victor Yergens, WGC-7827, on commercial flights in C-GFXA (C-310). Yergens' proficiency ride on C-310 had expired on March 6, 1979 and had not been renewed. Photocopies of airbills attached.
4. On June 13, 1979, Athabaska utilized Ernest Victor Yergens, WGC-7827, on a commercial flight in C-GZYJ (C-310). Yergens' proficiency ride on C-310 had expired on March 6, 1979 and had not been renewed. Photocopy of airbill attached.

Note: When the above flights were mentioned at the Company debriefing, Yergens said 'You didn't find the Twin Otter trips then.' Yergens has no record of training on DHC-6 either.

Request prosecution if possible."

Included in the audit of June 26 to June 28, 1979 were the following findings:

"Maintenance operations are not satisfactory. Should conditions not improve within 30 days, recommendation of suspension will be forthcoming. It is imperative that the 30 day follow-up inspection be carried out without any delay or postponement."

"The Company is not maintaining the aircraft in accordance with the Company Maintenance Manual and DOT requirements and the aircraft are not maintained in a safe state for flight."
(Emphasis added.)

On July 20, 1979 the Acting Regional Controller, Civil Aviation, forwarded the following letter to Athabaska Airways, included with which was the complete audit previously referred to:

"An inspection of your facilities at Prince Albert was carried out by inspectors from this office and our Saskatoon Office on June 26, 27 and 28, 1979.

The report of this inspection notes a number of deficiencies in both your Operations and Maintenance organization and are listed as Appendices A and B to this letter.

The violations of Air Regulations and Air Navigation Orders noted have been passed to our Air Regulations section for further action. Since this inspection, an additional instance of a pilot flying on commercial operations without having passed a proficiency check has been noted and also passed to the Air Regulations section.

These deficiencies and violations are an indication of inadequate supervision by the appropriate staff and suggests a lack of operational control within the company.

You are requested to reply in writing within 30 days of the receipt of this letter as to the actions taken by Athabaska Airways Ltd. to correct these findings and to prevent a reoccurrence in the future. A follow-up inspection will be scheduled after receipt of your reply."

Athabaska Airways replied to the letter, dated July 20, 1979, by the following letter, dated August 17, 1979:

"I acknowledge receipt of your letter dated July 20, 1979 with regard to the inspection carried out by your inspectors on June 26, 1979.

With reference to the deficiencies as pointed out in our Operations and Maintenance.

Operational

This company has been plagued by the loss of at least fifteen IFR pilots to the major airlines within the last nine months. Consequently a severe load has been placed on our Chief Pilot Mr. Hunt to keep up with the training. Also, as a result of pilot shortages he has had to do some of the charter flying himself. I might add here that our Chief Helicopter Pilot, who is an experienced pilot and myself had to do some of this flying also. It is noted that presently there are another four of our pilots being called to Air Canada. This only accentuates our problem. But it is hoped that these airlines soon will have filled their quotas for pilots and a more stable condition will exist within this company.

Insofar as the violations regarding air navigation orders and air regulations. Steps have been taken to correct the necessary amendments as required. As to proficiency checks it is noted that a summons has been issued for myself and Mr. Yergens to appear in court for violations. In this regard, I will say nothing at this time but bring forth our evidence as it affects us at that time.

Maintenance Facility Report

The majority of the deficiencies have been taken care of. Most are nothing more than entries either not made or in some cases not completed from a Service Bulletin to an A.W.D. entry. The balance of the itemized deficiencies are being corrected.

We wish to advise that for the past year we had hired as our Chief Engineer a Mr. Les Martin. He came to us as a qualified engineer with apparent good background as an administrator. We had weekly meetings with our Chief Personnel to review various aspects of both operational and maintenance problems. It became apparent that Mr. Martin was completely unable to handle his responsibilities as Chief Engineer. We asked him for his resignation in June and he is no longer with us. It is taking some time to bring the affairs of maintenance into line but considerable progress is being made.

We do not agree with the statement by your maintenance inspectors that our aircraft are not maintained in a safe state of flight. The attitude of one of your inspectors in particular put our supervisory staff in an adamant state of mind. Our maintenance and operation manuals were created with the co-operative help and advice of personnel from your department and were approved and accepted as such. We are now reviewing our manuals and making the necessary amendments. Your department will receive these amendments we expect by September 15, 1979.

I would like to convey to you and your departments that this company is only too willing to listen to your recommendations as a result of inspections. Our concern is for a safe operation at all times. I don't believe your inspectors can actually pinpoint any serious deficiency but nevertheless their advice is welcome.

In the future I would ask that when an inspection is contemplated, I be notified in advance. I wish to be present when such an inspection is made and be able to discuss these matters first hand in the presence of our staff.

Thank you for your consideration."

A Regional Airworthiness Inspector reviewed the reply of Athabaska Airways, dated August 17, 1979, and forwarded the following memorandum to CCAC with respect to it on August 24, 1979:

"Reference is made to the subject company letter dated August 17, 1979, under Maintenance Facility Report.

The deficiencies are not considered as nothing more than entries, but violations of ANO Series II, No. 4 and ANO Series VIII, No. 3, and the Engineering and Inspection Manual, Part II, Section 6, Para. 6.1.5. and is the responsibility of the owner to ensure compliance.

Our report that the aircraft are not maintained in a safe state of flight is confirmed by the number of deferred airworthiness items, and non-compliance of AWD's and Service Bulletins, non-compliance with dual inspections, overdue component replacement items and poor maintenance practices.

The attitude of our inspectors is considered normal when dealing with supervisory staff who refuse to co-operate or acknowledge their own weakness and errors.

These problems with Athabaska Airways has been consistent over the years, and will continue to be so until such times as the department takes some positive action against the company."
(Emphasis added.)

On July 30, 1979 the Regional Superintendent, Air Regulations, suggested that consideration be given to the suspension of Athabaska Airways' operating certificate by the following memorandum to CCAC:

"Athabaska Airways Limited

- (1) D. McDonald's memo of June 20, 1979 - AR 809 (2)
- (2) C. R. Dornan's memo - July 6 and 20, 1979.

Item # (1) the log book entries referred to in D. McDonald's memo on aircraft C-GJMP have been discussed with the Department of Justice, Saskatoon. DOJ is of the opinion that there is insufficient evidence to proceed on a charge under Section 809 (2) of the Air Regulations in that the company has corrected the entry in the log book.

The violations recorded in paragraphs 2 and 3 of C. R. Dornan's July 6, 1979, memo are being processed by Department of Justice, Saskatoon.

The comments re Floyd Robert Glass' flight on July 7, 1979, were checked against Prince Albert Flight Services Station records which confirmed the flight to Hatchet Lake and return to Prince Albert took place on July 7, 1979.

It is recommended that should this company continue to violate the Air Regulations and Air Navigation Orders suspension of their Operating Certificate should be invoked."
(Emphasis added.)

By the following letter, dated October 23, 1979, the Regional Controller, Civil Aviation, reported to Athabaska Airways with respect to Transport Canada's inspection carried on on October 2 - 4, in which letter the employment of Mr. Thomas Brennan as a full-time Operations Manager and the importance of that appointment were particularly noted:

"A follow-up inspection of your facilities at Prince Albert, Saskatchewan, was carried out by Transport Canada inspectors on October 2-4, 1979.

While the report of inspection indicates that some progress has been made in the maintenance department, and some of the deficiencies previously noted in the Operations department have been cleared up, it would appear that there is still considerable room for improvement, particularly in record keeping.

I am most concerned about the number of hours flown by some of your pilots - a particular case in point is Mr. J.D. Hill. The hours flown by this pilot during June, July and August must be considered a hazard to flight safety. This, combined with excessively long duty days, calls into question the ability of Athabaska Airways to conduct a safe service.

The most encouraging observation from this inspection is your employment of a full-time Operations Manager. This should help the Company greatly in the day to day running of Operations, providing Mr. Brennan does not become a regular line pilot. The overtasking of management personnel was mentioned in my letter of July 20, 1979, in connection with your Chief Pilot.

The itemized list of Operational and Maintenance deficiencies are attached as Appendices A and B to this letter. Please inform this office in writing within 30 days of what remedial action you have taken in these areas.

A further inspection will be carried out on the Company after Mr. Brennan and Mr. Richert have had time to settle in and make any changes required.

I note that the inspection of your facilities at the Saskatoon base was satisfactory, but since Mitchinson has been sold, please forward a copy of the agreement with the new owner."
(Emphasis added.)

By the following letter, dated December 4, 1979, reproduced below, Mr. Brennan resigned:

"You will recall that our original agreement was for a three month probationary period during which if I proved unsuitable or the job proved unsuitable we would part company.

I would remind you that since Oct. 1 I have 'quit' three times, and each time you persuaded me to 'try it a while longer'.

The last time was last Monday when I said most emphatically 'One Week' and indicated if there was no improvement my departure would be sudden.

There has been no improvement, and I am gone.

I will not catalogue grievances ... you have heard them, but for the record, I have been continually excluded from conferences and decisions concerning Engineering and Flight Operations, which indicates clearly the lack of regard in which you hold the position of Operations Manager.

When something serious goes wrong it is a poor excuse for the Ops. Mgr. to say 'I didn't know' . . . and that is the position you put me in, and I don't buy it.

You are aware I am sure, that I have kept a detailed Diary since Oct. 1, and a review of same leaves me aghast.

I hope our parting, while abrupt, may be friendly.

I recognize your problems, but I cannot help you.

Enclosed is a statement of Expenses and Wages due.

The simplest way to move my belongings seemed to be with the Truck, so please advise me .. return it, sell it in B.C., or trade it in on a step van for VC. I await your instructions.

Keys and Credit Cards enclosed herewith.

I wish you good fortune and health,"

The regulations require that a carrier have on a full-time basis a Chief Pilot and an Operations Manager. When it was discovered that Athabaska Airways had neither, the Regional Superintendent, Air Carrier Operations, required immediate action by the following letter to Athabaska Airways, dated December 14, 1979:

"Reference is made to our telex of December 12, 1979. The Consolidated Regulations of Canada, Chapter 22 (formerly ANO VII, No. 3) requires that a carrier have on a full-time basis a chief pilot that meets the requirements of Schedule A of Chapter 22, and an Operations Manager who is satisfactory to the Director.

Athabaska Airways Ltd. does not at present meet this requirement for the issue and retention of an Operating Certificate. If you now have someone available to refill these positions, please complete and return the enclosed nomination forms at the earliest possible date.

The ex-Operations Manager, Mr. T. Brennan, has answered most of the points listed in Appendix 'A' to our letter of October 23, 1979, but in reply to Item 4, in regards to the use of space blankets in lieu of sleeping bags, he stated that Mr. F. Glass is taking action on this item. In accordance with a decision made by Ottawa and forwarded to you in 1977, this is not acceptable and you are requested to confirm that the emergency equipment, as listed in Chapter 65 of the Consolidated Regulations of Canada (formerly ANO Series V, No. 12), is carried on all flights in the sparsely settled areas.

Your immediate attention to these matters is requested."
(Emphasis added.)

On December 17, 1979 evidence of a further infraction by Athabaska Airways was forwarded to CCAC(S) by an Air Carrier Inspector as follows:

"On the 14th of December, 1979, at approximately 1730Z, the subject pilot landed at Flin Flon airport in a Seneca II (Registration C-GNWX) belonging to Athabaska Airways.

He had been given the weather by The Pas Flight Services as being 500 feet obscured and ½ mile in snow showers. He advised aeradio that he had lost his airspeed indication.

A check of the aircraft journey log book confirmed that the aircraft belonged to Athabaska Airways, registered commercially, January 26, 1979, C of A valid to April 18, 1980.

The aircraft had only one ADF which was snagged as being intermittent, and prop anti-ice snagged as unserviceable. The forecast was for IFR with possible ice in the Flin Flon area for that day.

The pilot's documents were in order and he was aware of single pilot limits which are 800 feet and two miles. He was on a round robin IFR flight plan PA-FO-PA, picking up a passenger to take back to PA.

The aircraft departed on an IFR flight plan at 2010Z. The 2000 Z weather was 3000 partially, ceiling of 22,000 overcast and 1½ S-. He arrived at PA at 2154Z weather VFR.

Again we have Athabaska and its pilots completely disregarding the rules and regulations."
(Emphasis added.)

Eventually, on January 25, 1980 the Regional Controller, Civil Aviation, forwarded the following letter to Athabaska Airways inviting it to show cause why its operating certificate should not be suspended:

"This is in reference to your operation of aircraft registration C-GHWX (Seneca II PA-34). This office has received information that the aircraft is being operated under instrument flight rules.

The operation of an aircraft under instrument flight rules without having operating certificate authority is a direct violation of the Consolidated Regulations of Canada, Chapter 22 (formerly Air Navigation Order Series VII, No. 3, Section I, Para. 9) and is in contravention of the Consolidated Regulations of Canada, Chapter 703 (formerly Air Regulation 702).

A review of our records shows that the Company was advised on November 6, 1979, that an inspection of the aircraft would be required before IFR authority could be issued, but no action was taken to make the aircraft available. Our records also show that Mr. Glass was again advised of this requirement in a telephone conversation with Inspector Dornan on January 7, 1980. In the meantime, the Company appears to be continuing to operate the aircraft under instrument flight rules.

You are hereby invited to submit a statement and to show cause why your Operating Certificate No. 1243, dated November 16, 1979, should not be suspended. If a reply is not received by February 25, 1980, it will be assumed that you do not intend to reply and your Operating Certificate will be suspended under authority of the Consolidated Regulations of Canada, Chapter 2, Section 704 (formerly Section 703 of the Air Regulations).

If a reply is received, the decision on whether or not to proceed with the suspension will be made on the merit of the corrective actions taken."
(Emphasis added.)

Athabaska Airways replied on February 6, 1980 as follows:

"This will acknowledge your letter of January 25th, 1980, with reference to Seneca II PA-34 aircraft. Your letter refers to registration C-GHWX but we assume you mean C-GNWX as this is the registration of one of the Senecas owned by this firm.

It is understood by this firm that the above noted aircraft is not approved for instrument flight rules until such time as inspected and approved by your department. It was not normally intended that we use this aircraft in our charter operation but due to pressure of business and the fact that we have been plagued by poor avionics serviceability in our fleet of six Cessna 310 aircraft we found it necessary to use the subject mentioned Seneca on occasion. Our instructions to our pilots were that it be used VFR only. The Seneca actually is well equipped for instrument flight but to date has only one (1) A.D.F. We have arrangements made to install the second A.D.F. in Calgary as soon as the company there can work it in their schedule.

Since receiving your letter we have reviewed the current log book of the above mentioned aircraft from November 11/79 to date. We find that there were nineteen trips made out of Prince Albert. On checking the 'Athabaska Operational Flight Plan' records for these, all flights were filed VFR excepting the following and an explanation on each:

1. November 29th, 1979 - filed I.F.R. but due to possibility of trip extending into darkness on arrival back Prince Albert pilot filed I.F.R. He arrived back Prince Albert 17:35 hours. Weather was V.F.R. throughout trip.

2. December 5th, 1979 - filed I.F.R. The pilot explains that the weather was V.F.R. throughout the whole trip but due to the possibility of arriving back to Prince Albert after dark he filed I.F.R. He actually arrived back at 17:35 hours.
3. December 7th, 1979 - filed I.F.R. The same pilot as in (2) above states that again there was a possibility of arriving back to Prince Albert after dark; he arrived back at 16:56 hours. He states the weather was V.F.R. both legs of the trip. A lawyer was the only passenger and he could not be certain of his case being finished in time to arrive in Prince Albert before dark.
4. December 14th, 1979 - filed I.F.R. (This is the trip to Flin Flon where on arriving the pilot was questioned by M.O.T. personnel about flying below limits). The pilot states that the weather in Prince Albert was V.F.R. on departure. He had a forecast and states that the weather was to improve by the time he arrived Flin Flon to be within V.F.R. limits. Obviously it was not. He remained Flin Flon until weather was V.F.R. but even then he filed I.F.R. but states he flew V.F.R. all the way back to Prince Albert. There were no passengers except pilot into Flin Flon but one passenger on return trip to Prince Albert.
5. January 4th, 1980 - trip to La Loche and return Prince Albert. Trip was filed and flown V.F.R. excepting on return to Prince Albert, Air Radio advised special V.F.R. was required. Pilot instead requested I.F.R. into Prince Albert and was granted same.
6. January 7th, 1980 - trip to Wollaston Lake and return. Pilot states weather was V.F.R. throughout trip but he did file I.F.R.
7. January 22nd, 1980 - trip to Stoney Rapids and return. Weather was reported good V.F.R. throughout excepting at Prince Albert Airport where temperature was very cold and fog condition existed in places along edge of runway from propellers and exhaust gases of several aircraft having just taken off. Pilot filed I.F.R. to get out. Found weather good V.F.R. rest of trip.
8. January 24th, 1980 - Filed V.F.R. for trip Hudsons Bay -Saskatoon - Prince Albert to pick up one passenger Hudsons Bay to Saskatoon. Weather V.F.R. excepting on arriving Saskatoon was advised snow condition cutting visibility 1½ to 2 miles. He filed I.F.R. into Saskatoon left his only passenger and then filed I.F.R. to Prince Albert. Weather in Prince Albert was V.F.R.

To summarize we apologize for not having second A.D.F. in this aircraft and made ready for inspection. Apart from this one instrument the aircraft has two V.H.F./V.O.R., plus one A.D.F., one D.M.E., one transponder, one auto pilot, two altimeters, de-ice equipment and several other I.F.R. features. We have found that the avionic equipment, namely; 'King' is superior to A.R.C. equipment in our Cessna fleet. Pilots that fly it feel more confident with the equipment than with our Cessnas.

Also one of the pilots that made some of the above trips is no longer with us. We had considerable difficulty with him when it came to operations within our 'Operations Manual'. He was repeatedly warned about flight records not being properly kept so to make a long story short he has gone.

Apart from the one trip into Flin Flon (No. 4) it appears that although some trips or part legs of the trip for reasons stated were filed I.F.R. they could have and should have been filed V.F.R. With the exception of Flin Flon where there is a radio beacon, all other trips were, where I.F.R. might have been involved, V.O.R. facilities existed.

As a result of your letter on this matter and subsequent meetings with our pilots we have cautioned them to operate our aircraft within the scope of our 'Operations Manual'. In cases of emergency or sudden changes in weather where I.F.R. is the better way we feel perhaps the pilots used their better judgment in doing what they did.

We hope this letter of explanation will be considered favourably by your department and that no such drastic action need be taken such as lifting our operating certificate. With the activity we have going on in this area, namely; sparsely settled areas with limited facility aids in some places; the pressure put on us by the mining development and all other related business, the governments responsibilities as well, sometimes we find the written rules may be exceeded slightly. We endeavour not to exceed these rules, but believe generally we do operate cautiously and safely.

We have over one hundred employees on an average employed here. To say without prejudice, should you find it necessary to suspend our operating certificate we would have no alternative but to discharge the entire staff and close the doors. We sincerely hope under the circumstances this would not be the case.

Thank you for your co-operation and consideration."

The final disposition was a warning forwarded to Athabaska Airways on February 26, 1980 from the Regional Controller, Civil Aviation, as follows:

"Reference is made to your letter dated February 6, 1980, regarding the operation of your Seneca II PA-34 aircraft, C-GNWX, under instrument flight rules.

Please be advised that your letter of explanation and reasons for the violations cannot (be) accepted as valid. The number of violations over an extended period of time indicates a lack of operational control, and/or a disregard for the regulations by your supervisory personnel. Operation of aircraft C-GNWX under instrument flight rules off VOR airways, with only one ADF, also indicates supervisory personnel and the pilot(s) involved are not complying with Section 6.7.3 of your Operations Manual.

Having reviewed all the evidence, I am satisfied that Athabaska Airways Ltd. did conduct commercial operations in violation of Chapter 2, Section 703 of the Consolidated Regulations of Canada (formerly Section 702 of the Air Regulations), however, in this instance, it is considered that the public interest would best be served by a warning. You are also cautioned that further violations of the regulations could result in prosecution and/or suspension of the operating Certificate.

To preclude future violations of the operations specifications which form part of the Operating Certificate, it is recommended the Operations Manager and Chief Pilot be reminded of their obligations with regard to Chapter 22, Sections 9, and 10 of the Consolidated Regulations of Canada. (formerly, Sections 9 and 10 of ANO Series, No. 3).

Your co-operation in this matter is solicited."
(Emphasis added.)

COMMISSION'S AUDIT OF ATHABASKA AIRWAYS

In the course of the field investigations, consultants assigned by the Commission, Messrs. Thatcher and MacWilliam, to whom reference has previously been made, attended at the Regional Offices of Transport Canada in Winnipeg in February, 1980. As a result of inquiries made at that time, on February 13, 1980 they visited Athabaska Airways for a firsthand look at its operations. This particular carrier was selected because of what appeared to the consultants to be the poor accident record of Athabaska Airways and concern expressed to them by regional officials of the company's lack of maintenance control.

By coincidence, during their visit, an Athabaska employee discovered cracks in a Twin Otter flap control rod. Mr. Thatcher had particular expertise in crack detection. He had over 35 years of experience in visual detection of cracks in aircraft, in engine overhaul, in the use of inspectoscopes, fibre optics, dye penetrants, magnetic particle procedures, x-ray programs, ultrasonics and eddy current equipment. Mr. Thatcher noted from a visual examination that there were clear indications of cracking.

Under the provisions of de Havilland Service Bulletin 6/381, there is the following inspection note:

"In establishing the presence of a longitudinal crack by dye penetrant a false indication may be encountered due to the presence of manufacturing draw marks on the tube. If there is doubt on the validity of the crack indication the surface area of the tube along the crack indication should be rubbed down with crocus cloth to a depth of .005 inches approximately and the dye penetrant inspection repeated."

The company aircraft maintenance engineer proceeded to rub down the flap control rod in the location of the cracking.

A further de Havilland Service Bulletin 6/388 had added an important warning to the inspection procedure as follows:

"WARNING

Be careful not to remove the anodic finish on rods. Rods with the anodized finish removed must be rejected."

As a result of the abrasion, the anodizing was removed, and Mr. Thatcher reminded the engineer that the Service Bulletin demanded rejection of the flap rod. From his observation it was not clear to Mr. Thatcher whether the engineer was polishing the flap control rod or grinding out the cracks. He was concerned that the engineer may have intended to grind down the cracks and replace the flap control rod in the aircraft.

The pilots who were scheduled to fly the aircraft that day were still standing by, and even after the cracks were detected, were not told that the aircraft was unserviceable.

Both Mr. Thatcher and Captain MacWilliam were also concerned because the replacement flap rod was not ordered until late afternoon even though the cracks were discovered early in the morning.

The aircraft maintenance engineer denied that he was grinding out the cracks. He testified that he was using a rubber abrasive which he stated was as fine as a crocus cloth recommended for use in the Service Bulletin. He claimed that he had no intention but to reject the flap control rod in accordance with the Service Bulletin. When questioned as to why he continued to use the rubber abrasive on the rod for such a lengthy period of time, he responded to the examination by Mr. Sopinka as follows:

"Q So that was a deliberate process of removing the anodizing in order to perform the test?

A Yes. I was curious to find out if it was a crack in my own opinion or not.

Q You spent an hour rubbing it just because you were curious?

A That's right.

Q You weren't planning to use that rod?

A No, if I had to go through the anodizing I couldn't.

Q So you knew that as soon as you went through the anodizing that rod couldn't be used?

A That is right.

Q I am instructed that de Havilland received a call sometime around 3 o'clock for a new rod?

A Yes.

Q Now, so knowing that that contract -- that that aircraft was supposed to leave that day, around noon you removed the anodizing knowing that that rod was useless and didn't call de Havilland until 3 o'clock for the new one?

A That is right.

Q Now, in the meantime I am instructed further that the pilots that were supposed to fly that aircraft out were not told at any time, and they were around there all day, that that aircraft was unserviceable and for all intents and purposes they weren't going to be needed that day. Is that a fact?

A I don't think I informed them at all.

Q You knew from de Havilland that there was no way they were going to get that rod there that day?

A Not on the same day I phoned, no.

Q So why have the pilots hanging around thinking they are going to fly that aircraft if you knew that that rod has to be replaced, you know it's not going to be replaced until the next day, why were not the pilots told, who were milling around there, that they are not going to be needed that day?

A I have no answer to that one."

The defective rod was in fact rejected, and the aircraft grounded until a replacement rod was delivered from de Havilland.

Messrs. Thatcher and MacWilliam reported what they had observed to the Regional Superintendent, Aeronautical Engineering, who thereupon forwarded the following memorandum to the Regional Airworthiness Inspector, dated February 29, 1980:

"Early in the month of February, 1980 two representatives of the current Aviation Safety Enquiry visited this office briefly to review the general maintenance situation with air carriers in this Region. Subsequent to the visit here, they travelled to Saskatchewan and spent one or two days with Athabaska Airlines and some other Saskatchewan carriers. One reason Athabaska was chosen was because of their extremely poor accident record.

During their brief stay with Athabaska which was on February 13th, 1980 the company was in the process of undertaking an Airworthiness Directive on their de Havilland DHC-6 aircraft, Registration CF-SCA concerning flap pushrods. This Directive involves inspection of flap pushrods, and if cracks are found, rods must be replaced. Crack indications were encountered by the company, however, at this stage they proceeded to try and polish and/or grind out these cracks. It was only when a member of the Safety Commission present, questioned the company on this practice, they then made contact with de Havilland concerning ordering new rods.

This company has had a history of problems both in the maintenance side and the operational side as well as a poor accident record. It is disturbing that the impression left from the above situation would indicate that, had the Safety Representative not happened to be there the company would have continued flying.

I suggest the concerned members of your inspection staff should be aware of this and it should be borne in mind the next time there is a visit to Athabaska one should check the logbooks of aircraft CF-SCA to ascertain if pushrods were changed before further flight after this inspection on the 13th of February, 1980 or determining whether other action was taken.

We all share a concern to try and put a stop to questionable practices and in particular cover-up type situations. I am sure that you will consider this and take appropriate steps."

On June 27, 1980, the Regional Superintendent, Aeronautical Engineering, reported to the Regional Airworthiness Inspector the results of the subsequent investigation by Transport Canada as follows:

"This memo refers to my memo of 29 February 80 and rescinds allegations made against the company now determined to be incorrect, and outlines the follow-up action that was taken at the time.

First, the allegation in the previous memo that the company was grinding out cracks on a DHC-6 flap rod is now known to be incorrect. The rod in question had been forwarded to the MOT Aviation Safety Lab by the company. A telex from the lab (copy attached) states that no indications of grinding or metal removal is evident and that the zone of the rod that was inspected indicates only a buffing or polishing to facilitate crack inspection. This is an accepted procedure.

As to the stated impression that the company may have intended to re-install a cracked rod and continued flying, this was based on statements made to the undersigned by the representative of the Aviation Safety Inquiry. A subsequent follow-up inspection by one of our Airworthiness Inspectors established the rod in question had been replaced at the time of inspection by the company, hence there is no indication the company flew or intended to fly with non-airworthy rods.

With respect to follow-up, the information as contained in the referenced memo was verbally received from the representative of the Aviation Safety Inquiry approximately 28 February 80. Based on the statements he made, my 29 February 80 memo was written and we contacted an Airworthiness Inspector by telephone who was in the general area of Prince Albert, Saskatchewan and requested he check with the company to determine if the flap rod in question had been changed. This was done approximately 29 February 80 and he reported that the flap rods were changed at the time of inspection on 13 February 80 and the cracked flap rod had been sent to the Aviation Safety Lab in Ottawa, hence he could not inspect the cracked rod. The inspector's report dated 29 February 80 was subsequently received in this office. We were satisfied the company had in fact changed the rod in question at the time of inspection. We did not pursue the matter further until the week of 23 June 1980 when this issue was raised in the Safety Inquiry. We have now established by contacting the Aviation Safety Lab that there was no evidence of grinding of the cracks on the rod as had been alleged.

We regret allegations that were subsequently found to be incorrect had been made against the company. We trust that since the allegations were entered in the Aviation Safety Inquiry, these findings of our follow-up indicating they were not correct, will also be entered in the Inquiry."

COMMENT ON CASE STUDY NO. 6

I think that it was reasonable for Messrs. Thatcher and MacWilliam to be concerned that, but for their presence, the Twin Otter might have been flown with the defective flap control rod. There was considerable evidence of improper maintenance on the part of the carrier of which they were made aware. The crack was clearly visible from a visual examination, and the extensive work done on the rod by the aircraft maintenance engineer after the crack was detected was somewhat unusual. His explanation for doing so was not satisfactory. Having the pilots stand by and failing to order a new rod immediately upon the detection of the crack supported an inference that the defective rod was going to be used again. However, having regard to the evidence given by the aircraft maintenance engineer and the subsequent examination which established that there had been no grinding of the rod, I am prepared to accept his testimony that he had no intention of reusing the rod and that it was to be rejected.

In the case of Athabaska Airways, unlike many others which were studied by the Commission, there was active monitoring of the carrier. In the view of the inspectors, there were continued violations of safety standards and they concluded that "the aircraft are not maintained in a safe state of flight". The denial by the carrier of the alleged violations was rejected by the inspectors in most cases. Constant warnings did not appear to have the desired result, and, yet, the culmination of all the inspections and of all the earlier warnings resulted only in a further warning.

Little respect for the enforcement process can be achieved if it is disclosed that it has no teeth. Where, in the view of the inspectors, constant monitoring discloses continued violations, and where alternative judicial proceedings are shown to be ineffective, effective administrative action must be resorted to. Otherwise, the process is brought into discredit.

This case study supports the view frequently expressed during the hearings that enforcement is not taken seriously by many carriers and provides an explanation for such an attitude.

7. De HAVILLAND DHC-2 BEAVER C-GUIG, ATLIN, BRITISH COLUMBIA,
PRIVATELY REGISTERED AIRCRAFT, R. G. BOND, MARCH 21, 1979

BACKGROUND

On March 21, 1979 Mr. R. G. Bond departed in his privately registered Beaver single-engine aircraft from the airstrip at Tulsequh, B.C., with a 16-year-old passenger. The passenger's seat had been removed to accommodate unsecured cargo. The youthful passenger sat on a cushion on the cargo without a seat belt. Mr. Bond encountered low cloud while flying through a narrow, rocky, mountain pass. While attempting to reverse course, Mr. Bond lost reference with the horizon and became disoriented. The left wing struck snow and both wings were torn off. There was no evidence of failure or malfunction of the engine, airframe or controls. The passenger died, and Mr. Bond, who was wearing a seat belt, survived with relatively minor injuries.

An examination of Transport Canada's files disclosed that, prior to this accident, Mr. Bond had the following record:

1. January 29, 1973 - Pilot's Licence Suspension - 90 days
Section 821 Air Regulations - Failure to have on board the aircraft Certificates of Registration and Airworthiness, Journey Log Book or Flight Crew Licence.
2. October 19, 1973 - Letter of Caution
Air Navigation Order Series V, No. 4 - Failure to file flight plan or flight notification in sparsely settled area.
3. May 8, 1975 - Letter of Warning
Section 400 Air Regulations - Flying an aircraft while not being holder of a valid and subsisting licence due to expiry of medical.
4. June 21, 1978 - Found Guilty in Provincial Court of following:
 1. (3 counts) Section 7(5) Air Carrier Regulations - Operating Commercial Air Service contrary to the conditions contained in the carrier's licence.

2. (2 counts) Air Navigation Order Series II, No. 2 (3) - Flying an aircraft without a seatbelt for each person aboard.

3. (2 counts) Air Navigation Order Series II, No. 8 (3) - Flying an aircraft without the required life saving equipment.

(Emphasis added.)

INVESTIGATION

Following a lengthy investigation by the RCMP, by Transport Canada's officials and by a coroner's inquest, four charges were laid against Mr. Bond for violation of the Air Regulations. In addition, the RCMP recommended the immediate suspension of Mr. Bond's pilot licence. In doing so, Corporal R. Lawton, of the Atlin Detachment of the RCMP, stated in his summary of the case for the Regional Superintendent of Air Regulations:

"The writer feels it is imperative that some action be taken by the Ministry of Transport to have (Bond) stopped before a similar event occurs. (Bond) has been operating illegally in the Atlin area for three years and because of Atlin's remoteness and the Court sitting three times a year, with only two adjournments another year has passed."
(Emphasis added.)

After considering the RCMP report, the Regional Controller, Civil Aviation, made the following recommendation in a memorandum to the Department of Licensing and Inspection, Ottawa, on April 9, 1979:

"Due to the remoteness of the Atlin area, court cases may take a year or more to conclude, through adjournments and infrequent sittings. (Bond) has displayed, as his record indicates, a complete contempt for the provisions of the Aeronautics Act and associated regulations and orders, regardless of whether they relate to safety or licencing matters. There is no doubt that this contempt of the safety requirements led to the aircraft crash and to the death of his sixteen year old passenger.

On April 5, 1979, a registered letter was sent to (Bond) advising him that his medical profile has been assessed as 'unfit,' a decision arrived at by the RAMO due to head injuries and reported dizzy spells being experienced by (Bond). Copies of related correspondence are attached. His past record leaves considerable doubt as to his compliance to such requirements, which in

effect removes all licence privileges, until satisfactory medical reports are received.

It is the recommendation of this office that, based upon (Bond's) past and present record and his complete disregard and contempt of the Regulations relating to flight safety, his Commercial Pilot Licence No. XDC () be cancelled or suspended for a period of five years, and during that period no flight crew licence of any type be issued in his name."
(Emphasis added.)

Mr. D. E. Lamont, Director, Aeronautical Licensing and Inspection Branch, replied on April 26, 1979:

"A five-year suspension of (Bond's) licence seems to be an appropriate corrective measure in view of his apparent disregard of the flight safety provisions of the Air Regulations and his demonstrated disdain for safety practices in general. Nevertheless, administrative enforcement action in this case must be viewed in light of impending court proceedings. Telephone conversations between LICR and PCAR enforcement specialists reveal that the RCMP intend to lay charges in connection with the recent violations. Should (Bond) be under suspension for those violations at the time of the trial, it is possible that the court could hold the administrative action to be prejudicial. Prejudice aside, there is always a risk that the charges could be dismissed on other grounds. In this event, (Bond) would probably have recourse to appeal the suspension to the Federal Court. Accordingly, it is suggested that alternative options be explored.

The first of these options would be to suspend (Bond's) licence for violation of a Regulation that will not be cited in the prosecution. This suspension would have to be for a commensurate period irrespective of a prosecution for other offences. In following this option, the normal enforcement procedures of investigation, allegation and hearing, would be required.

The second option would be to seek a court injunction prohibiting (Bond) from flying or operating an aircraft until resolution of the court case. Liaison with the Department of Justice should determine the procedure for obtaining and applying such a court order. Securing an injunction would achieve the desired objective of protecting public safety while ensuring that the court action would not be prejudiced by administrative action of the Department.

Under either option, assuming a finding of guilty, the prosecutor in speaking to sentence may remind the court of its discretion to recommend, to the Minister, suspension or cancellation of the licence.

Of the two, the second option is the more desirable if it proves to be practicable. It would seem to have more social force than the administrative action alluded to above and it would make possible methods of restraint not available in suspension action. In addition, it would leave open the choice of

eventually proceeding according to your recommendation. It is suggested that you discuss these options with your Regional Department of Justice office to determine which option is the more feasible and proceed accordingly.

If, after prosecution, an extensive period of suspension is in order, a further report and recommendation should be submitted."

On April 25, 1979 Mr. Bond was found guilty in Provincial Court of the following:

(2 counts) Section 7(5) of the Air Carrier Regulations - Operating a Commercial Air Service contrary to the conditions contained in the carrier's licence.

The Regional Controller, Civil Aviation, consulted the local Department of Justice which supported his recommendation for licence suspension under Section 407 of the Air Regulations in preference to complicated, time-consuming injunction proceedings. Armed with this support, the Regional Controller again wrote to headquarters on May 14, 1979 reiterating his recommendation for a five year suspension to be implemented as soon as possible. He noted that as a result of Bond's April 25, 1979 conviction there was now a total of nine convictions since June 1978.

The legal opinion provided to headquarters was that a five year suspension was tantamount to revocation of the licence. On June 13, 1979 Mr. Lamont advised Mr. Arpin:

"Inspection Instructions do not specifically address the subject of licence suspension prior to prosecution for the same offence and we have no recollection of any ad hoc cases. In this instance, however, in view of Mr. Kier's memorandum and since a member of his office will be prosecuting Mr. Bond it is recommended that the licence suspension prosecution strategy be in accordance with his advice to PCA except that any suspension period prior to prosecution be limited to a maximum of two years.

It is clear that all concerned share the view that Mr. Bond's licence should be suspended for a lengthy period as soon as possible in view of his apparently incorrigible disregard for the Air Regulations and Air Navigation Orders. Since paragraph 1.2.1.1 of Inspection Instructions limits suspension by Regional Controllers, Civil Aviation to 14 days, a memorandum to PCA for your signature approving a suspension period of not more than two years in this instance has been prepared."

Mr. P. E. Arpin, Director General, Civil Aeronautics, replied to the Regional Controller in a memorandum of June 15, 1979. Mr. Arpin accepted the advice from the Vancouver Regional Department of Justice that the licence should be suspended under Section 407 of the Air Regulations. However, he added the following paragraph:

"With regard to the length of the suspension, it is noted that eventual resolution of the case in court may take more than a year. Two years thus would appear to be a suitable period of suspension. Further licence suspension in the event of a conviction may also be considered. In this connection, the prosecuting attorney could, when speaking to sentence, ask the court to recommend licence suspension in addition to the penalty.

Accordingly, suspension of (Bond's) Commercial Pilot Licence XDC-() pursuant to section 407(a) of the Air Regulations is approved for a period not exceeding two years. . . ."

DISPOSITION

On June 25, 1979 Transport Canada sent Mr. Bond a show cause letter, and lacking a reply, his pilot's licence was suspended on August 24, 1979 for a period of two years.

On November 8, 1979 Mr. Bond was found guilty on four counts arising out of the fatal accident of March 21, 1979. He was found guilty of operating an aircraft in a negligent or reckless manner and fined \$1,000.00. He was found guilty of flying with an unsecured cargo and fined \$100.00. He was found guilty of flying without a seat belt for his passenger and was fined \$250.00. He was found guilty of operating without emergency equipment and fined \$100.00. In total, the fines amounted to \$1,450.00. Mr. Bond was also convicted of two counts of operating a commercial air service contrary to the conditions contained in the carrier's licence.

COMMENT ON CASE STUDY NO. 7

In refusing to adopt the recommendations of the region for a five-year suspension, Mr. Lamont and Mr. Arpin appeared to have been influenced by a concern for the doctrine of double jeopardy which, in my opinion, was misplaced, and by the legal advice that a five-year suspension was tantamount to revocation.

In my opinion, in these circumstances the doctrine of double jeopardy is completely inapplicable. In judicial proceedings if the court were satisfied that a conviction would result in the loss of the livelihood of the offender, such a circumstance might be a mitigating factor in determining an appropriate penalty. From the regulator's point of view however, where judicial proceedings have been resorted to, the concern is not to further punish the offender for the past. The regulator, in considering whether administrative action should be taken, must have regard for the safety implications in the future.

In this case, it was the view of the RCMP and the regional officials that Mr. Bond had shown a complete disregard for the safety standards. Within a year he had nine convictions. Amongst his earlier convictions, there had been two for flying an aircraft without a seat belt for each person on board. This offence was repeated on March 21, 1979, where the absence of a seat and a seat belt appears to have resulted in the death of a 16-year-old passenger. In addition, the enforcement officials were satisfied that over a lengthy period of time Mr. Bond had been operating what is known as a chisel charter service, i.e., providing commercial air carrier service when unlicensed to do so. From his past record there was no reason to believe that Mr. Bond would, in future, comply with safety standards or other relevant aviation regulations when the period of suspension had expired. Under such circumstances, it is difficult to understand the rationale of a two-year suspension.

An equally disturbing feature of this case is that notwithstanding the demonstrated disregard for safety standards, Transport Canada issued an operating certificate on May 9, 1980.

Section 700 of the Air Regulations provides:

"No person shall operate a commercial air service in Canada unless he holds a valid and subsisting certificate issued by the Minister certifying that the holder thereof is adequately equipped and able to conduct a safe operation as an air carrier."
(Emphasis added.)

In the show cause letter forwarded to Mr. Bond relating to the suspension of his pilot's licence, the Regional Controller, Civil Aviation, summarized the Department's view of his past history as follows:

"The circumstances surrounding your accident of March 21, 1979, together with your previous record of infractions indicate to the undersigned a complete disregard of the Aeronautics Act, the Air Regulations, Air Carrier Regulations and aviation safety in general."

The explanation given for the issuing of an operating certificate was that it was issued to Taku Air Transport, of which Mr. Bond was the sole proprietor, and not to Mr. Bond.

Mr. Melki R. Bandravala, the Superintendent of Air Carrier Operations for the Pacific Region, drew the following distinction:

". . . we are not granting the Operating Certificate to an individual. Those infractions were committed when he was an operating pilot, which he was not at the time of the issue of the Operating Certificate.

. . .

As a matter of fact, the application came in on behalf of Taku Air Transport from the Canadian Transportation Commission. The licence was issued on behalf of Taku Air Transport and as such, I just wanted to stress the fact that we are dealing with a corporation and not an individual as such."

Mr. Bandravala continued in the following exchange with Commission Counsel:

"MR. SOPINKA

Q Why were you stressing that fact when I asked you why you were giving a licence to Mr. Bond?

A Because you were stressing at that time Mr. Bond's past history which he had already accounted to society for.

Q Well isn't the ordinary interpretation that his past history wasn't important because you were giving the Operating Certificate to a corporation?

A That is quite correct.

Q Well then, I have been advised by Mr. Bond's counsel, and there will be evidence, that the Certificate was given to Mr. Bond personally?

A No, the Certificate was not issued to Mr. Bond. The records will prove it, because the Operating Certificate has been issued to Taku Transport."

In actual fact, Mr. Bond testified that his Canadian Transport Commission Licence was in his own name while operating under the firm and style name of Taku Air Transport.

It was apparent that following the period of suspension and assuming that Mr. Bond would honour it, the economics of his operation required that he resume his flying activity.

Section 701 of the Regulations reads:

"Every certificate issued under this Part shall be in such form as the Minister may prescribe and shall contain such special terms and conditions for the safe and proper operation of the service as the Minister deems necessary."
(Emphasis added.)

And Section 810 further provides:

"The Minister may withhold the issue of any licence, certificate, permit or other document under these Regulations if, in his opinion, the issue thereof is not in the public interest."

Although there was full authority in the circumstances to withhold the certificate, this was not done, nor, indeed, were there any terms prescribed in the operating certificate which prohibited Mr. Bond's right to resume his flying operations on behalf of Taku Air Transport.

I am sympathetic to the view that once a person has paid his penalty for past infractions, such convictions in themselves should not stand in the way of the opportunity to earn a future livelihood. But that principle is subject to the limitation that in considering whether a pilot's licence should be suspended or an operating certificate granted, there must be reason to believe that notwithstanding past conduct the licence holder will not

in the future be a menace to himself, to passengers and to the public. This could not be said of Mr. Bond.

Chisel or illegal charter services have posed a particular problem for the enforcement specialists. Mr. Cecil R. Sampert is presently an enforcement officer with the Canadian Transport Commission in the Pacific Region and a former RCMP officer. He testified at length as to the difficulty of controlling unlicensed operations and, while doing so, made the following observations:

"... it was a cheap licence to operate in the sense that, if you compare a licensed carrier with the illegal operator, the illegal operator has very little overhead in that all he really requires is a plane and fuel and a pilot to fly that aircraft, as opposed to the licensed carrier who must maintain facilities for the public; he must maintain his aircraft to commercial standards; he must have proper insurance; he must have personnel to maintain records for the DOT and for the ATC, which an illegal carrier might not have or may have for that matter, but in most cases would not have. There has to be a dispatcher, and on and on, which adds to the overhead costs considerably but it's all under the name of safety, I would believe."

In order to meet this unfair competition, licensed carriers competing for business are tempted to short cut maintenance and other safety features, and the entire carrier service suffers.

Mr. Ned C. Carnie, present supervisor of Aircraft Licences and a former enforcement officer in the Central Region, to whom reference has been previously made, made the following strong recommendations with a view to curbing the illegal charter operations.

"... I have recommended that if we are serious about stopping him then let's have as a penalty the forfeiture of the airplane and a prohibition against issuing him, directly, or indirectly, an Operating Certificate for a good long period, perhaps five years. You stop them and he gets convicted of bootlegging, and thereby shows the need for the service and he gets a licence and a lot of them do that. I know several people who got started that way. I put this to them just recently, that if they thought they were going to lose their airplane and never get an OC for four or five years, would they have done it; and they said, never, never would they have even considered it."

Also a lot of people who finance airplanes would not lend money to someone who used an aircraft as an illegal air service if they knew it was going to be forfeited and they would have no collateral."

The issuing of an operating certificate in the circumstances of this case to Mr. Bond, coupled with the short period of suspension of his pilot's licence, was inconsistent with the enforcement action necessary to deal with the serious safety implications which this case, and other like cases, warranted.

Those responsible for the issuing of the operating certificate were apparently of the view that it was to be granted to a limited company, and thus the past record of Mr. Bond was irrelevant. As it turned out, the certificate was in fact issued to Mr. Bond. There did not appear to be a limited company. But even in the case where consideration is being given to the granting of an operating certificate to a limited company, surely the past safety record of the person who will be operating the company must be considered. In such cases, the distinction between granting a certificate to a company and to an individual is completely illusory.

**8. AIR CANADA FLIGHT 790, L-1011 LOS ANGELES - TORONTO,
MARCH 9, 1980**

BACKGROUND

On March 9, 1980 Air Canada Flight 790 left Los Angeles for Toronto with 287 passengers and a crew of 11 on board.

During the hearings of the Commission in Vancouver, Ms. Barbara M. Dunn, National Safety Chairperson, of the Canadian Airline Flight Attendants' Association, while submitting a brief on behalf of the Canadian Airline Flight Attendants' Association (CALFAA), on May 29, 1980 gave the following testimony:

"With regard to the question of Acting Flight Attendants, this would be a situation where perhaps a flight had gone to a station and then all of a sudden a load went up to more than the required one per forty, and according to the Air Navigation Orders, anyone who acts as a crew member on board an aircraft or anyone who acts as a cabin attendant on an aircraft must have gone through an initial training program and their recurrent training program once every twelve months.

The provisions for Acting Flight Attendants is an exemption to that Air Navigation Order or Air Regulation, and it is an exemption that is included in most of the airline manuals. I have a copy here of the Air Canada manual, also the Nordair Manual if you wish that Mr. Commissioner.

What it allows for is that the Captain may brief someone who perhaps works on the ground, or a passenger travelling -- a company employee travelling on the aircraft may brief them in the operation of an emergency exist, and they can go on the flight as an Acting Flight Attendant. We feel that the exemption shouldn't be there because we feel that passenger safety is being jeopardized if someone is there who isn't properly trained and the other reason that we feel exemptions of this kind are dangerous is that it leads to those exemptions being stretched and I refer to a flight that left Los Angeles on the 9th of March with four Acting Flight Attendants on board. The exemption says one. The Air Navigation Order says none. And yet this flight left with four of them and two hundred and ninety-three passengers on board, and I would suggest to you, Mr. Commissioner, that this is in direct contravention of the Regulations, and also jeopardizes the safety of the passengers on board that aircraft."
(Emphasis added.)

In cross-examination by Mr. E. T. Nobbs, Q.C., counsel for ATAC, the following further facts were elicited from Ms. Dunn:

"Just one last matter, Mr. Commissioner, and it relates to a statement made by Ms. Dunn relating to acting Flight Attendants, and in particular a flight of Air Canada's from Los Angeles to Toronto where apparently there were four acting Flight Attendants on board the aircraft.

Q Are you familiar Ms. Dunn, with the qualifications of the four people who were the acting Flight Attendants on that particular flight?

A One of them was a second officer who was on a Fam flight.

Q And that completed his training?

A I assume so, it doesn't say. It just says that he was the second officer on a Fam flight. The other three were passenger agents from the Los Angeles terminal.

Q And are you aware of the fact that each of the other three parties were former stewardesses?

A Yes, I am. I believe the operative word there is 'former'.

Q Yes. And are you aware if there were any problems on that particular flight and what the conclusion drawn by the lead Flight Attendant and the Captain were at the conclusion of the flight?

A I haven't had the opportunity to speak to the Captain, but from the in-charge Flight Attendant report received, is that there were no safety-related problems, or she didn't mention any if there were."

Air Navigation Order Series VII, No. 2, section 40 provides as follows:

- "(1) No air carrier shall operate a passenger-carrying aeroplane unless at least the following number of cabin attendants are included in the crew:
- (a) one attendant when the number of passengers carried is more than 9 but not more than 40 or the number of passengers carried is less than 10 and the aeroplane cabin is, because of structure or loading, not accessible from the flight deck;
 - (b) two attendants when the number of passengers carried is more than 40 but not more than 80; and
 - (c) one attendant for each unit of 40 passengers or portion thereof when the number of passengers carried exceeds 80.
- (2) Notwithstanding subsection (1), no air carrier shall operate a passenger-carrying aeroplane with fewer cabin attendants than the minimum number used in satisfying the requirements of section 41."

Section 44(1) and (2) of the said Air Navigation Order further provides:

- "(1) No air carrier shall use a person as a crew member unless that person has satisfactorily completed
- (a) the initial training phase of the air carrier's approved training program; and
 - (b) the appropriate recurrent training phase and any required checks at least once every 12 months following the initial training phase.
- (2) Where any recurrent training phase is completed or any required check is taken either during the calendar month preceding or following the month in which it became due, it shall be deemed to have been completed or taken in the month in which it became due."

INVESTIGATION

It would appear that the officials of Transport Canada were unaware of the alleged violation of the Air Navigation Order until the matter was brought to their attention by the testimony of Ms. Dunn. Consequent upon that testimony, the matter was investigated by the appropriate officials. The result of the investigation and the

recommended action are disclosed in the following memorandum, dated January 21, 1981, from Mr. Don Lamont, Director of Licensing and Inspection, to Mr. Pierre Arpin, the Director General, Civil Aeronautics:

"Enforcement Action Pending Against Air Canada

This memo is to brief you on an enforcement action pending against Air Canada and to solicit your concurrence for a plan of action. The matter arises out of an Air Canada L-1011 flight which departed Los Angeles airport for Toronto on March 9, 1980. Company records indicated that 287 passengers were on board, necessitating the presence of eight qualified flight attendants - (reference ANO VII, No. 2, Section 40(1)). However, apparently due to a scheduling problem, only four qualified flight attendants were available at the departure time. Accordingly, four unqualified personnel were conscripted to act as flight attendants on the trip and the aircraft departed for Canada.

Air Canada has been authorized to conscript up to one unqualified person as a standby flight attendant in such circumstances, however, the use of four unqualified standby flight attendants is in clear violation of ANO VII, No. 2, Section 44(1).

QCAR and the RCMP in Montreal are proposing that this matter be pursued before the courts, and are ready to lay charges as soon as Headquarters concurrence is received. I have studied the matter and feel the following points bear your consideration.

Firstly, this matter came to our attention through testimony introduced by CALFAA at the Dubin Commission hearings on May 29, 1980, some three and one half months after the incident.

Secondly, this incident is the second time Air Canada has become involved in regulatory matters with the Montreal Air Regulations office. In the previous instance, an Air Canada DC-8 was ferried between Toronto and Montreal without a valid C of A and C of R, resulting in a letter of warning being issued to the company. QCAR is of the opinion that a warning for the subject violation would insufficiently deter such an occurrence from taking place in the future, thereby exposing a significant number of passengers to an unacceptable safety risk in the case of an emergency evacuation, etc.

Thirdly, and for obvious reasons, a suspension of Air Canada's Operating Certificate or any part thereof is out of the question, thereby limiting the possible avenues of enforcement action to either pure administrative (i.e. warning) or prosecution action. QCAR is seeking approval for the second alternative on the grounds that the publicity involved in a court appearance would sufficiently motivate the company into improving the control over its operations.

Fourthly, it should be noted that administrative action against the crew in this instance is also out of the question, owing to the construction of current legislation. A request for improved wording of the relevant regulations has already been sent to DSL.

Finally, before proceeding into court without a full appreciation of the risks involved, it should be noted that while the evidence available is sufficient to permit conviction, a technicality in the statute of limitations may prompt Air Canada to move that the charges be dismissed. This contingency has been studied, and although there are differing opinions as to its likelihood, there is agreement that the risk and consequences involved are considered acceptable. Further, there is no evidence to conclusively indicate whether Air Canada is aware of this possible loophole. Should the charges be dismissed, the Department has the option of taking administrative action against the company as well as seeking a reclarification of the offending legislation.

In view of the above, I am recommending that the charges be laid immediately and that we proceed as planned. Your concurrence on this matter is solicited."
(Emphasis added.)

Upon receipt of this memorandum, Mr. Arpin on January 23, 1981 wrote the following memorandum to the Administrator, Mr. W. M. McLeish:

"Should we prosecute or would you prefer to discuss at the next CATA/Air Canada Liaison Meeting in Montreal on February 19th? The statute of limitations must be considered since the offence took place on March 9, 1980."
(Emphasis added.)

The Administrator replied as follows:

"Proceed but advise Charles Simpson of your action.

p.s. He may refer you to another V.P. because it is Cabin Crew, but I believe the Captain is responsible."
(Emphasis added.)

The Administrator thereupon advised the Minister of the proposed prosecution by the following memorandum:

"This is to apprise you that three charges under the Aeronautics Act against Air Canada will shortly be laid concerning a flight on March 9, 1980, from Los Angeles to Toronto. An L-1011 aircraft carrying 287 persons took off

with three unqualified flight attendants, contrary to Air Navigation Order VII, No. 2, para. 44. This is viewed as a danger to the public insofar as untrained flight attendants could, in an emergency, impede a safe evacuation of the aircraft. This enforcement action is intended to be in accordance with present policy, in that no corporation, be it Crown owned or otherwise, should be above the requirements of the law."
(Emphasis added.)

Notwithstanding the recommendations of Mr. Lamont, the senior enforcement official within Transport Canada, and the approval of the Administrator to prosecute, the Director General of Civil Aeronautics thought it appropriate to seek further advice. On February 20, 1981 he wrote Mr. C. K. Kennedy, Assistant General Counsel, Transport Canada, seeking legal advice, and in his letter to Mr. Kennedy concluded as follows:

"In summary, although it is recognized that the Commercial Air Services Orders are written to compel certain behaviour on the carriers rather than placing an unfair burden of responsibility on flight crews, it remains a matter of concern that this particular case risks serious embarrassment to the Minister should it go before the courts. This concern is further compounded by the possibility that key officials of this administration may be called as witnesses. Your earliest reply is requested since the statute of limitations expires March 8, 1981."
(Emphasis added.)

After studying the Department's file, Mr. Kennedy was of the opinion that a prima facie case had indeed been made out that Air Canada had contravened the provisions of the relevant Air Navigation Order, but pointed out that the determination of whether a prosecution should be instituted was that of the Air Administration when he wrote:

"Accordingly, any decision to prosecute or not to prosecute with respect to any contravention of A.N.O. Series VII, No. 2 or the Air Regulations arising by reason of your Department's investigation of Air Canada Flight No. 790 of 9 March 1980 on the basis of the evidence recorded in your departmental files must rest with the Air Administration."
(Emphasis added.)

The matter was also referred to Mr. Christopher A. Amerasinghe, Toronto Regional Office of the Department of Justice, who wrote to Mr. Kennedy on March 2, 1981 as follows:

"RE: AIR CANADA
Our File: TO-111200

I have reviewed your letter dated February 12, 1981, addressed to Mr. G. McCracken, together with the attachments therein. After carefully reviewing the evidence, it is my view that while there may be a technical violation of the regulations, the facts surrounding the commission of the alleged offence are such that the case does not merit prosecution.

I note that the incident is an isolated one, and is not indicative of a policy decision by Air Canada. I note also that the infraction resulted from a decision made by the captain of the aircraft in an emergency situation where he was faced with a choice of cancelling the flight or proceeding with it with what he considered to be adequate cabin crew. It is significant that of the three persons who were designated flight attendants, all three were passenger agents and of them, two were ex-flight attendants from major airlines.

The letter of the Flight Service Director to the Crew Scheduling Manager in Montreal seems to indicate that the cabin crew did an excellent job.

In all of the circumstances, it is my view after discussing the matter with Mr. McCracken, that no useful purpose will be served by prosecuting Air Canada or any other person with an offence. On the contrary, it may serve to severely embarrass the Crown were we to proceed with this type of prosecution.

I would, however, recommend that your Department write to Air Canada referring to this matter, and indicating to them that you did submit the matter to us and that while we felt that there was in fact a violation, we have decided in this instance, in the exercise of our discretion, not to prosecute the case, given the extenuating circumstances. However, it will be my view that you should point out to Air Canada that a repetition of this conduct by the Company in the future may not be viewed so lightly, either by your Department, or ours."
(Emphasis added.)

DISPOSITION

Mr. Arpin concluded that no prosecution against Air Canada should be instituted and that a letter of warning would suffice, and his determination is set forth in his following memorandum, dated March 9, 1981, to Mr. Lamont:

"This will confirm the decision not to prosecute Air Canada in the matter of Flight No. 790 which left Los Angeles on March 9, 1980, bound for Toronto with four flight attendants lacking the prescribed qualifications.

It is only fair for any air carrier to expect alleged violations to be brought to their attention by way of warning and a request for explanation. If the explanation and the action taken by the carrier are not considered satisfactory, he should be advised, and adequate corrective measures prescribed. In any case where legal action or OC suspension action is contemplated, the carrier should be given an opportunity to show cause why such action should not be taken.

Air Canada should have been afforded the same courtesy we extend to any air carrier in any enforcement action. In addition, when dealing with our national carrier, if we are not satisfied with the explanations, the pertinent correspondence should be tabled and discussed at one of the regular high level management meetings to prevent a recurrence.

If this procedure had been followed, the letters to Salo and Clarke would have surfaced with explanations and, if the action was not considered satisfactory, appropriate measures would have been dictated.

As it happened it was only after I mentioned the case at the last high level meeting that the letters were produced at my request a few days later.

Proceeding with this case merely to save face because it has been aired in public, without giving Air Canada full opportunity to demonstrate how they can rectify the situation, would expose the Minister to the same kind of ridicule involved in the case of the summons issued to our VIP Jetstar pilot for an aircraft parking infraction on our own airport.

The Terms of Reference of the CATA/Air Canada Liaison Committee (copy attached) state in part:

'Air Canada is Canada's largest airline with the largest experienced staff of technical airline experts. It is a Crown Corporation. These factors give it a unique relationship with the Canadian Air Transportation Administration. To ensure an effective communication link, regular meetings between Executive, Technical and Operating groups in CATA and in Air Canada are necessary.'

The question, therefore, is not so much whether or not there is a prima facie case (this is evident), but whether or not the Minister would have been fully justified in taking the case to court without equitable handling through the CATA/Air Canada Liaison Committee.

In future, please ensure that any such matters are submitted as agenda items for discussion in Committee, to help preserve the unique relationship with Air Canada referred to earlier. Legal action should only be considered as a last resort."
(Emphasis added.)

Pursuant to his instructions, Mr. Lamont wrote to the Acting Director of the Aeronautical Licensing and Inspection Branch as follows:

"... Please advise Montreal region that Air Canada is a special case that must be handled as outlined in this letter. All prosecution actions will be referred to DGCA."
(Emphasis added.)

On March 19, 1981 Mr. Frank Black, the Acting Director of Aeronautical Licensing and Inspection, wrote to Mr. Lamont as follows:

"Air Canada Prosecution

Reference is made to DGCA's memo of March 9, 1981, and DLI direction to LIC March 10, 1981. (Ref. #1)

With respect to DLI direction to LIC on the subject, certain questions are raised.

I would respectfully suggest that if we are to treat Air Canada as a special case insofar as safety related violations of regulations are concerned, then we will be seen to have essentially two standards of enforcement.

The direction that all prosecutions of Air Canada be referred to DGCA was adhered to even in this special case. Reference to DLI memo to DGCA of January 21, 1981, (Ref. #2) clearly outlines the circumstances, the sensitivities, and the proposed course of action. This memo was received in DGCA's office some 6 weeks ago.

The attached AATA action request of January 27, 1981, (Ref. #3) gave direction to proceed with the prosecution as opposed to raising the issue at the CATA/Air Canada liaison meeting (see DGCA minute to AATA, January 28, 1981, Ref. #4).

Further, a memorandum to the Minister (Ref. #5) endorsed by DGCA and DGCT served notice of the forthcoming prosecution, stating 'this endorsement action is intended to be in accordance with present policy, in that no corporation be it Crown owned or otherwise, should be above the requirements of the law.'

On this basis, I would suggest that LIC/LICR acted responsibly and in accordance with direction received from senior management. On February 17, 1981, some three weeks later, AATA requested DGCA to coordinate the memo to the Minister with DGCT (Ref. #6).

I recall receiving the request on February 26th. The memo was prepared that evening by LICR and signed by DGCA the following morning (Ref. #7). The memo reflects concerns expressed by DGCA with respect to the proposed prosecution. DGCT's reply of the same date (Ref. #8) cites a 'prima facie case' and states that any decision to prosecute or not to prosecute must rest with the Air Administration.

This then brings us back to DGCA's memo of March 9, 1981.

It is submitted that QCAR had already sent a letter of allegation and a warning letter on a previous infraction (Ref. #9) indicating that future infractions might entail legal prosecution. This was obviously a future infraction that was treated in a fair and equitable manner. Another letter of warning would not likely have any better results than the first one and it was therefore recommended that stronger action be taken to ensure that we now had the undivided attention of the carrier.

Further, it has not been policy to send letters of allegation on proposed court action. The subpoena itself is 'the letter of allegation'.

The decision to prosecute was not based on saving face. Air Canada had been previously involved in a violation as stated in your memo to DGCA, and the recommendation to take court action (approved by AATA) was based on the need to prove to the company that the Department intends to apply the regulations to ensure safe operation of aircraft.

From a regulatory standpoint, the letters of reprimand to Captain Salo serve little purpose since the violation related to ANO VII, No. (1)(c) which defines the responsibility of the carrier not the pilot. Since O.C. suspension under these circumstances is out of the question, the only alternative that remained was prosecution.

It is suggested that the analogy between this case and the Jetstar parking ticket is not particularly relevant. There appears to be no safety implication with the Jetstar. This incident however involved 280 passengers on an aircraft operated with unqualified crew members as required by ANO VII, No. 2. The implications of an emergency evacuation in these circumstances could be far reaching indeed. Further, our first consideration should be an equitable application of the regulations as endorsed by DGCA in the memo to the Minister (Ref. #5). This should ensure that the Minister is not exposed to any form of ridicule.

There are other points that could be addressed, but I believe the main issues have been addressed with one exception. Throughout the Dubin Inquiry (Enforcement phase) charges were made against the Department with respect to lack of support to the Regions from Headquarters and the apparent inability of the Department to ensure that major carriers conformed with regulatory requirements. We have attempted to ensure to the best of our ability that these charges are not justified. The existing Enforcement Section (LICR), although relatively small, has put forth a great deal of effort to put the enforcement activity on a professional footing. Given strong support by senior management much more can be accomplished in this area. The subject memo from DGCA if made available to enforcement staff, both in Headquarters and Regions, could seriously impact the momentum that is now in place.

I suggest that you will agree that we should discuss these concerns with DGCA at the earliest opportunity to clarify existing policy and resolve apparent misunderstandings."
(Emphasis added.)

On March 24, 1981 Mr. Lamont forwarded the following reply to Mr. Black:

"AIR CANADA

Reference is made to your memorandum of March 19, 1981, and the meeting held in DGCA's Office on March 24, 1981, with Mr. Wagner and ourselves in attendance with DGCA.

As a result of those discussions and in compliance with DGCA's instructions, please take the following action to culminate the matter regarding Air Canada Flight No. 790 on March 9, 1980.

- (a) Please have RSAR, Montreal, prepare and issue to the Vice-President, Flight Operations, Air Canada, a letter of warning in the normal form and manner. The letter of warning should point out the fact that Air Navigation Order, Series VII, No. 2, holds the air carrier responsible for ensuring that the proper number of qualified flight attendants are on board an aircraft as required by that Air Navigation Order and, therefore, Air Canada is held responsible for dispatching the flight in a manner not in accordance with the Air Navigation Order.
- (b) The letter should be explicit that since this is the first offence detected by Transport Canada, a letter of warning, in this case, may best serve the public interest, however, should future breaches of pertinent legislation occur, administrative action regarding operating authorities or judicial action will be taken dependent upon the circumstances surrounding the case.
- (c) The letter should also point out that the matter is being referred to the Air Carrier Division in Headquarters for follow-up action to ensure that procedures have been put in place to prevent any further occurrences of this nature.

In addition to the above, please brief LIO on this matter so they can, using RSAR, Montreal, letter of warning as a reference, correspond with and visit Air Canada to determine what corrective action has been taken."

The following is the letter formulated by headquarters enforcement section forwarded to the Quebec Region for its issuance to Air Canada setting forth the final disposition:

"This letter refers to Air Canada's Flight 790 which left Los Angeles for Toronto on March 9, 1980, without the number of qualified flight attendants required in Air Navigation Order, Series VII, No. 2, sections 40 and 44.

Our investigation into this matter has revealed the following:

- 1) Air Canada L-1011, Flight 790 left Los Angeles at 19:37 GMT on March 9, 1980, with 287 passengers and a crew of 11 on board.
- 2) Of the eight cabin crew members assigned to duty on board Flight 790, four were unqualified to act in this capacity, including Second Officer Mark Brundage, and passenger agents Barbara Pearce, Linda Shipke and Beverly Averback.
- 3) A signed statement given to the RCMP by Mr. Francis Overney, Chief of Air Canada's Flight Services Training, declared that Barbara Pearce, Linda Shipke and Beverly Averback did not have the required training on L-1011 aircraft.

No doubt you are aware that section 703 of the Air Regulations states: 'No person shall operate any commercial air service except in accordance with such standards for the safe and proper operations of the service as the Minister may prescribe.'

Air Navigation Order VII, No. 2, section 40(1) requires the air carrier to provide at least eight cabin attendants for a load of 287 passengers. A cabin attendant is defined in section 2 of the subject order as a crew member, other than a flight crew member assigned to duty in a passenger carrying aeroplane during flight time.

ANO VII, No. 2, section 44(1) requires the air carrier to ensure each crew member has satisfactorily completed the prescribed initial and recurrent training where applicable.

In addition to violating the Air Regulations and Air Navigation Orders, operations of this nature expose aircraft passengers to an unnecessary and unacceptable risk in the event of an emergency aircraft evacuation or other such contingency.

Please note that this matter was referred to the Department of Justice with the view towards prosecution. Although a prima facie case was apparent, it was decided, in the exercise of our discretion, not to prosecute the case before the courts. However, Air Canada's explanation for this incident is requested, along with whatever corrective steps the company will take to prevent a recurrence of such an event. Your response should be addressed to the Regional Superintendent, Air Regulations within 30 days of receipt of this letter."

(Emphasis added.)

COMMENT ON CASE STUDY NO. 8

The disturbing feature in this case study is not so much the failure to prosecute Air Canada for the alleged violation, but the reason for not doing so.

There could be a legitimate difference of opinion as to whether the gravity of the offence under the circumstances warranted a prosecution. It was the considered opinion of those who had the immediate responsibility for enforcement that it did. The important role that flight attendants play in evacuation and other emergency situations should not be minimized. The regulations are enacted to ensure that those properly trained are available and in sufficient numbers to respond to any emergency involving safety. Elaborate training manuals have been prepared so that flight attendants are qualified to meet such emergencies.

In this case, eight qualified flight attendants were called for by the relevant regulations. Certain carriers appear to have been given a qualified exemption by administrative action not contemplated by the regulations. In this case, the exemption would have permitted Air Canada to recruit one person to act as a flight attendant who was not qualified; in fact there were four. There were, therefore, serious safety implications in the event of an emergency.

The record disclosed that a prior breach of the regulations had resulted in a warning. It was the view of those responsible for enforcement that a second warning would be inadequate, and the only other practical proceeding would be that of a prosecution. This recommendation received the support of the Administrator who pointed out to the Minister that "This enforcement action is intended to be in accordance with present policy, in that no corporation, be it Crown owned or otherwise, should be above the requirements of the law".

The determination not to prosecute was not because the alleged violation was not serious enough to warrant prosecution, but because the matter had not been previously processed through the Canadian Air Transportation Administration/Air Canada Liaison Committee. The existence of such a Committee was not disclosed by either Air Canada or the Air Administration during the hearings and only came to light when the Commission obtained the documentation relating to the disposition of this matter.

When the Commission learned of the existence of the Canadian Air Transportation Administration/Air Canada Liaison Committee, Mr. Ouellet, Associate Counsel to the Commission, wrote Mr. Arpin requesting information with respect to the Committee. On April 15, 1981 Mr. Arpin wrote the following letter to Mr. Ouellet:

"Reference is made to your letter of April 9, 1981, requesting information regarding the CATA/Air Canada Liaison Committee.

It is most unfortunate that the existence of this Committee was not brought to the attention of the Commission of Inquiry on Aviation Safety. In order to provide the Commission with the pertinent details, please find attached the terms of reference for the Committee, as established in September of 1977.

With regard to the May 29, 1980, Air Canada L-1011 flight referred to in your letter and also referred to by Canadian Air Line Flight Attendants Association at the hearings, pertinent documentation is attached herewith.

The documents are:

- (1) a letter formulated by our Headquarters Enforcement Section which was forwarded to Quebec Region for their issuance to Air Canada;
- (2) a memorandum to all Regional Controllers requesting that the Director General, Civil Aeronautics, be informed of problems encountered with Air Canada to enable discussion of those issues during the CATA/Air Canada Liaison meetings.

You will note from the text of the memorandum to the Regional Controllers, Civil Aviation that the data requested is for information and discussion purposes only and that the Committee does not and should not play a role in enforcement matters as they relate to Air Canada.

I trust this is the information you require, however, if I may be of further assistance, please do not hesitate to contact this office."
(Emphasis added.)

I agree with Mr. Arpin that the Committee should not play a role in enforcement matters as they relate to Air Canada, but he was quite in error in advising the Commission that it did not do so. In determining not to prosecute Air Canada with respect to Flight L-1011, as has been noted above, Mr. Arpin stated:

"The question, therefore, is not so much whether or not there is a prima facie case (this is evident), but whether or not the Minister would have been fully justified in taking the case to court without equitable handling through the CATA/Air Canada Liaison Committee.

In future, please ensure that any such matters are submitted as agenda items for discussion in Committee, to help preserve the unique relationship with Air Canada referred to earlier. . . ."
(Emphasis added.)

On the very day that Mr. Arpin wrote to Mr. Ouellet, he also forwarded the following memorandum to all Regional Administrators:

"Canadian Air Transportation Administration/
Air Canada Liaison Committee

In September of 1977, terms of reference for the above noted Committee were established in the main, to provide a forum to discuss major issues specific to Air Canada. For your information, a copy of the terms of reference is attached herewith.

Recently an enforcement investigation was carried out and a prosecution of Air Canada was contemplated for violations of Air Navigation Order, Series VII, No. 2. The members of the Liaison Committee were not made fully aware of the pending enforcement action prior to the meeting and, therefore, a full discussion on the issue by the senior management of CATA and Air Canada was not possible. It is most desirable to have sufficient information available to bring an important issue of this nature to the attention of senior Air Canada officials not only to make them aware of CATA concerns but to solicit their assistance in ensuring that the safety standards are maintained to the highest degree possible.

In order to enhance the functions of the Committee and bring matters of importance to the attention of Air Canada and CATA senior officials, it is requested that cases of pending prosecution, administrative action, major discrepancies noted on operational or airworthiness audits or issues of major concern to Regional staff, be forwarded to my office. With regard to prosecutions and administrative actions, information should be limited to actions pertaining to the Company (Air Canada). Information regarding actions taken or to be taken against company employees is not required for tabling before the Committee.

The above information dissemination process is not to deter or hamper the normal investigative and regulatory process as conducted by Regional officials.

Your co-operation in this matter would be greatly appreciated."
(Emphasis added.)

The membership of the Canadian Air Transportation Administration/Air Canada Liaison Committee is composed of the following:

"TRANSPORT CANADA

- Administrator, Canadian Air Transportation Administration
- Deputy Administrator, Canadian Air Transportation Administration
- Director General, Civil Aeronautics
- Director General, Airports & Construction Services
- Director General, Policy, Planning and Programming, Air

AIR CANADA

- Executive Vice President & Chief of Airline Operations
- Group Vice President - Airline Technical Operations
- Group Vice President - Airline Sales and Service
- Vice President - Maintenance
- Vice President - Flight Operations
- General Manager - Properties and Facilities

(Revised October 9, 1980)"

The purpose of the Committee was to ensure an effective communication link between CATA and Air Canada, and

- "1. Provide a medium to foster familiarization and understanding between CATA and Air Canada Executives so that each may better accomplish its roles and fulfil its responsibilities.
2. Provide a forum to discuss major issues specific to Air Canada and to promote programs designed to provide solutions to the identified issues (normal communication on items common to the Canadian air transportation industry will be through ATAC)."

There are obviously many advantages in having such a Committee, but the Committee should have no role in the determination of whether a prosecution of Air Canada should be instituted.

It is unique to suggest that a carrier against which a violation is alleged should have a role in determining whether it should be prosecuted. As Mr. Black pointed out in his memorandum of March 19, the determination not to prosecute in this case disclosed two standards of enforcement, one for Air Canada and one for all others. Nothing could be more destructive of an effective enforcement policy.

Furthermore, I do not share the view of the Director General, Civil Aeronautics, that before a prosecution is instituted, there should be "a warning and a request for explanation". When administrative action is proposed to be taken, the rules of natural justice require that an alleged offender should be advised of the nature of the complaint being made and be given an opportunity to respond before administrative action is taken. On the other hand, if a decision is made to prosecute, the judicial process ensures the alleged offender of every opportunity to meet the case alleged before there is a determination.

It is also to be noted in this case that the carrier was asked for a letter of explanation after having been advised at the same time that no prosecution would be instituted.

Another disturbing feature of this case study is the introduction, again, of concern for political embarrassment in the event that a prosecution were to take place. In the case study of Tomahawk Airways, supra, I made note of the assurances given by the Director General that the reference to political embarrassment as a factor in the determination of administrative action in that case had been misunderstood. At that time I was disposed to accept his assurances in that respect. Regrettably, such a factor still persists as an element in the determination of enforcement action.

From my point of view, I would have thought it axiomatic that matters of enforcement with respect to Air Canada should not be submitted to the Liaison Committee, that Air Canada should be treated the same as any other carrier, and that political considerations should have no part to play in the enforcement process.

PART IX

ENFORCEABILITY OF WEATHER MINIMA

The statistics set forth in Volume 1 of this Report disclosed that many accidents and incidents occur in Canada when take-offs and landings are made at a time when the visibility is below specified limits. Weather minima limits have been established in the interests of safety. However, the present provisions are not an effective deterrent to unsafe operations and most of them are unenforceable.

Before analyzing the problems inherent in the enforcement aspects of weather minima related offences, it might be well to review some definitions. An instrument approach is a method by which an aircraft descends towards an airport while maintaining a safe clearance from the ground, obstacles, and other aircraft until visual contact is established. Instrument approaches are either precision or non-precision. During a precision approach the instruments disclose both the direction that must be followed to arrive at the runway as well as the precise altitude at each point along the descent path, called the "glide slope". A non-precision approach gives the direction towards the runway but does not give glide slope information. Consequently, limits are higher for a non-precision approach because there is less information received from the navigational aids. In Canada, the majority of approaches are non-precision approaches.

The most common precision approach system is called the "instrument landing system" (ILS). Other systems include the microwave landing system (MLS) and precision approach radar (PAR).

The ILS utilizes four different radio transmitters with four corresponding indicators on the aircraft and they are: directional guidance transmitted by the localizer, vertical guidance transmitted by the glide path transmitter, plus two discreet points on final approach marked by the outer marker and the middle marker transmitters. Furthermore, a runway with an ILS will have special approach lights on the ground to make the runway area more visible.

Often associated with an ILS is a non-directional beacon (NDB) which is an additional transmitter to help the pilot find his way to the localizer. Furthermore, should the localizer fail, the NDB can provide directional guidance to the aircraft. If the glide slope fails, the rest of the system can be used for a non-precision approach restricted to higher limits.

The ILS behaves like an invisible funnel that narrows towards the threshold of the runway. The localizer delimits the sides while the glide slope delimits the roof and floor of the funnel. The resulting space within these parameters guarantees safe clearance between the aircraft and ground obstacles. The pilot's functions when following the ILS signal has been compared to steering a car while observing the white line on the pavement through a hole cut in the floor of the automobile. In an aircraft, the pilot has two of these imaginary lines, one for the localizer and one for the glide path.

At the present time, aircraft are not allowed to achieve touchdown following instrument guidance alone. At a specified height above the ground, the pilot must make the decision whether he can see out the windshield of his aircraft well enough to land by visual reference. At or above this decision height (DH) should the pilot decide he does not have the required visual reference, he must apply power and carry out a missed approach. The decision height of a particular runway is determined by a number of factors, including the category of ILS in use. In Canada today there are two categories of ILS termed CAT I and CAT II. Seven major airports are approved to CAT II limits while all others are restricted to CAT I limits or above. The principal differences between CAT I and CAT II are the decision height and visibility requirements. CAT I approaches can go no lower than 200 feet above ground before establishing visual contact while on a CAT II approach the minimum may be reduced to 100 feet. Due to stringent equipment and personnel requirements, only the largest airlines in Canada such as Air Canada and CP Air are permitted to carry out CAT II approaches.

A different standard is utilized for non-precision approaches. In these approaches the pilot must descend no lower than what is termed the "minimum descent altitude" (MDA). The normal standard in use in Canada is usually 400 feet - 1 mile. This signifies that the pilot should be able to establish visual contact with the runway at 400 feet altitude, one mile from the runway.

For our purposes the enforceability of weather minima refers to these precision and non-precision instrument approaches. The difficulty arises if a pilot lands his aircraft when the reported weather is below the established limits.

A very comprehensive and useful brief on this subject was submitted to the Commission by Mr. Vern R. Speiran, Supervisor for Licensing and Instrument Standards for the Atlantic Region. It was his opinion that it was impossible to take action on violations of standards governing weather limits because the Regulations contained "loopholes larger than aircraft". The inability to enforce weather minima has been of great concern to Mr. Speiran for many years. His views were supported in this respect by almost all other witnesses. On February 21, 1977 he forwarded a memorandum to headquarters, part of which reads as follows:

"IFR MINIMA, WEATHER IRREGULARITY REPORTS & REGULATIONS

Reference is made to LIOI letter of December 13, 1976. The Weather Irregularity Report is satisfactory in its present form except that a column should be added in which the tower controller could assess whether in his opinion an actual breach of minimums had been committed.

The Aeronautics Act authorizes the control of Aeronautics and empowers the Minister of Transport, among other things, to supervise all matters concerning Aeronautics. Air Regulations Sections have been formed to administer and enforce the Aeronautics Act in accordance with specific Orders, Regulations, Circulars and Notam. Today's society, for various reasons, appears to only heed enforced and enforceable laws. One area in which Air Regulations Sections have fallen short of providing the safety to which the public is entitled is in ensuring that Air Regulations are adhered to both in letter and intent.

Specifically Air Regulations 506 and 552-A have been written to provide M.O.T. in part with the capability to prevent landings and take-offs being completed when ceilings or visibilities are below specified limits. Limits have been set purely in the interests of safety. However, because of legal interpretations in the past or reluctance on our part to test their strength in court, violations of IFR minimums take place, mainly by Commercial operators, all too frequently and with little apparent concern for any action Air Regulations Sections are able to take.

Some of the reasons are:

1. Many of the Air Regulations are not considered enforceable by the people so tasked because of their wording and the difficulty of obtaining admissible proof.

2. Alleged breaches of Air Regulations are becoming so common that with the limited staff and equipment available all but recurrent and obviously hazardous situations must be overlooked.

3. The cost to the taxpayer of investigations is out of all proportion to the punishments awarded by the Courts in the majority of cases.

4. Crews commit breaches with managements knowledge, and in many cases open approval, when in their opinion Air Regulations are too restrictive to their immediate interests.

During the past year in the Atlantic Region alone more than 600 instances are on record, through Weather Irregularity Reports, where pilots have taken off or landed when the officially reported weather at that airport was less than that required in Canada Air Pilot or Company Operations Manuals as applicable. It should be noted that even Cat II limits are being broken. (Attached as Appendix 'A' are typical examples of Reports.)

Certainly in many of the above recorded instances the actual weather in the landing zone may have been better than that recorded. In probably as many cases it was worse. Undoubtedly these variations have been a strong contributory cause to pilots and management not accepting Weather Reports as a true indication of actual conditions. Attached as Appendix 'B' are typical examples of answers from pilots when they have been queried regarding possible violations of Air Regulations 552A. It is obvious that they have no intention of incriminating themselves. Most pilots will not admit that they would do anything dangerous, to them their ability and skill are being challenged.

Pilots have chosen to ignore limits for various reasons, not the least of which may have been pressure from management, but mainly because of the unenforceability of present regulations. Also the present inaccuracies in measurement of ceiling and visibility in the take-off or touchdown zone have led pilots to come and go at will. The only time action is taken to curb this dangerous practise is when accidents occur.

There are several recent known instances which very nearly resulted in serious accidents in this Region all partially attributable to landings completed when the reported weather was below limits. In none of these cases was enforcement action taken by this Ministry mainly because the Official Weather Report is not accepted as proof of existing weather conditions. ANO Series V No. 31, with its present wording, will be ignored because it is open to misinterpretation, i.e. para 5(1) and (2). It would be impossible to prove intent prior to pilot obtaining visual reference. Also paras 10, 11, 12, 13 and 14 leave loopholes larger than aircraft.

While the following recommendations may seem drastic and past fatality records in Canada where weather has been proven to be a factor may not appear to bear out their use, unless action is taken to improve the existing situation the probability exists that a major accident will occur soon.

...

It should not be too difficult for this Ministry in consultation with the industry to arrive at a compromise which would enhance safety and provide acceptable schedules for the public.

The practise of paying lip service to air safety must be stopped. Safety Regulations must be enforceable and enforced. A jury of their peers, as in Naval tradition, should be set up to try breaches of the Aeronautics Act so that more equitable punishment is meted out. When jet aircraft hit wing-tips on runways in questionable weather landing situations on several occasions fatal accidents are only inches away. The situation can be improved with only slight disruption to air services."

A study of the subject was initiated by headquarters resulting in a draft report, dated July 1978. Set out below is the Executive Summary of the report:

"This report results from a study which included an examination of approach and take-off minima and an assessment of their adequacy and of the enforcement of minima regulations.

The subjects investigated in the study include minima objectives, policy and terminology; regulations and their enforcement; information and reference systems; determination of minima; and weather measurement and reporting. The constituent elements of the instrument approach are analyzed and discussed in detail; minima-related accident data are summarized and examples of international minima specifications are provided for comparison.

The principal finding of the study is that

a significant number of deficiencies and anomolies exist in the framework for establishing and applying minima in Canada.

The principal recommendation of the study is that

a working panel should be formed (as detailed in Paragraph 11.5.5 of this report) whose task would be to develop proposals for corrective action and to produce an OPERATING MINIMA POLICY AND STANDARDS MANUAL. The manual would contain policy regarding the objectives of minima; standards, rationale and criteria for the development of minima; and all policy regarding minima regulations and their enforcement. It would serve as the central reference document for inspectors and the aviation community.

The content of the manual should serve to correct many of the existing deficiencies identified in this Report. An outline of a representative number of areas which are concluded to be deficient is as follows:

PRINCIPLES AND OBJECTIVES - the purpose of minima is not clearly defined.

TERMINOLOGY AND DEFINITIONS - often confusing, non-existent or ambiguous.

CRITERIA - sometimes not developed, therefore not utilized in the specification of minima.

POLICY (CAP MINIMA) - although well documented in the Manual of Criteria for Instrument Approach Procedures no rationale is provided.

POLICY (SPECIAL MINIMA) - special minima are approved for Air Carriers for which no policy exists in the Certification Manual - no obvious logic for some of the special minima approved for Corporate Operators.

REGULATION AND ENFORCEMENT - an effective deterrent to unsafe operations has not been provided.

REFERENCE INFORMATION - lacking.

It is recommended that the proposed working panel should consist of personnel drawn from a wide range of Civil Aeronautics Sections with possibly, Industry representation. The panel should complete Phase II of the study under the chairmanship of a senior DGCA - appointed officer who would ensure a high level of inter-Branch co-ordination. Guidelines to be used by the panel are available in this Report and its available supporting documentation. Additional data which could be of benefit may be obtained from the ICAO operations panel which is, to some extent, working on a parallel exercise.

It is recognised that regulation enforcement is the most difficult area in which to provide remedial measures. Nevertheless the Phase II effort should be directed at all possible improvement in existing and proposed legislation. Confusing rules should be changed, ambiguous terminology re-worded and objectives confirmed or developed."
(Emphasis added.)

As I have pointed out, the standard non-precision approach in Canada requires a descent no lower than 400 feet and a visibility of one mile. In the United States, the same standard is 300 feet - 1 mile. Although the higher Canadian altitude limits would at first glance appear safer, it does in fact oblige the pilot to commit himself to a steeper rate of descent once he establishes the required visual reference. Why then has the Canadian authority established the 400 foot limits? The 1978 study on weather minima to which I have referred, replies as follows:

"The Rationale for the basic CAP approach minima values could not be determined (i.e., MDA of 400 ft. and visibility of 1 sm.). . . ."

It thus seems fair to say that while taking steps to assure greater enforcement of weather minima, there seems to be a need for action to rewrite the existing standards, using the 1978 study as a reference. Similar differences exist between Canada and the United States as regards precision approaches, and here the 1978 report lists the following reasons for an additional 100 foot limit in Canada:

- i) the Canada Air Pilot is primarily used by itinerent general aviation pilots and they would not be familiar with the runway environment, and
- ii) airborne navigation receivers and flight instruments on general aviation aircraft are not checked regularly to ensure their accuracy."

There is evidence that the lower limits are in fact safer because at the 200 foot limit, the pilot has better visual references with the runway approach lights which gives the pilot better guidance to control his aircraft. The Canadian rationale, namely, that our general aviation pilots do not have the required competence to conduct approaches to 200 feet and that their instruments are not checked regularly, was questioned by the 1978 study. This study included the following:

"Statistics pertaining to instrument rating flight tests do not contain any evidence that approach or take-off minima are presenting any problems to the instrument rated pilot. Recorded cases of test failures due to improper procedures relating to minima are negligible."

The carriers which are presently authorized by special permission to descend to 200 feet do not have their flight instruments checked on a regular basis.

Indeed the 1978 study makes the following comment:

"The argument pertaining to height loss and altimeter error applies equally to commercial operators of large aircraft and to small GA aircraft operators. If one was to claim that the commercial operator would have better altimeters (for example a servoed altimeter provides a small reduction in the total error) it could also be claimed that the small aircraft is likely to have a much smaller height loss. The conclusion therefore could be made that there should be little significant difference between the DH allowed the two operations, with the provision that each has a pilot who satisfied the TC Class I instrument standards."

For these reasons I am of the opinion that the weather minima as regards precision approaches should also be revised and updated.

I set out below some of the Regulations as illustrative of some of the enforcement problems which relate to them:

"555. No pilot-in-command of an aircraft shall take off at an aerodrome under IFR where the visibility at the aerodrome is reported, by an observer accredited by the Minister, to be below the visibility specified for take-off at that aerodrome in the Canada Air Pilot or the operations manual of the operator.

555.1 No pilot-in-command of an aircraft with the intent to land shall continue an instrument approach under instrument flight conditions below the decision height or minimum descent altitude specified for that aerodrom in the Canada Air Pilot or the operations manual of the operator where minima is less than that for which the pilot-in-command and the aircraft are approved unless the required visual reference has been established.

555.2 No pilot-in-command of an aircraft shall at any time permit an instrument approach to be continued with the intent to land where the runway visibility is reported, by an observer accredited by the Minister, to be less than the visibility required for an instrument approach down to Category II minima.

555.3 The Minister may cause a Manual of All Weather Operations (Category II) to be published and maintained in which the criteria for Category II IFR operations of aircraft are specified."
(Emphasis added.)

It is to be noted that Regulations 555. and 555.2 are dependent upon "an observer accredited by the Minister". Mr. Speiran advised us that no such observer has been appointed. The reference in Regulation 555.1 to "unless the required visual reference has been established" is said to be unenforceable because it is a subjective test, and under such circumstances Mr. Speiran observed "That means that we have to take the pilot's word for it. He is the only man there in the cockpit at that time that has the forward visibility, supposedly, to decide whether he has the required visual reference."

Regulation 555.2 presents the added difficulty of having to prove "an intent to land".

With respect to Regulation 555.3, it is pointed out that there are only seven CAT II airports in Canada and one of them at St. John's, Newfoundland, is presently operating as a CAT I airport only.

Mr. Speiran further pointed out that by reason of the difficulty of enforcing the Regulations, those responsible for enforcement have become discouraged and fewer weather irregularities reports are being filed. He made the following recommendations:

- "1. Rewrite Air Regulations 552A (repealed and replaced by 555. ff.) to include 'officially reported weather conditions'.
2. Establish a more accurate method of measuring actual weather conditions by;
 - (a) Installation of a Ceiliometer at an appropriate location near the end of all IFR runways to enable A.T.S. to accurately measure the ceiling at the time of landing. This could economically be done on at least the most utilized bad-weather runways;
 - (b) Use RVR readings as the official visibility;
3. Close a runway when designated limits are reached."

The foregoing recommendation (2b) refers to "RVR". At certain airports, there is a device called a transmissometer that can measure the visibility between a light beam and a corresponding photo-electric cell. The information from the transmissometer situated near the runway is adjusted by a computer and the resulting visibility in hundreds of feet is read by an air traffic controller or a flight service specialist. To distinguish from the term "prevailing visibility", measured by a human observer, the transmissometer reading is termed "runway visual range (RVR)". The RVR reading is useful between 600 and 6,000 feet visibility. Since a single RVR reading comes from one part of one runway, the actual visibility at other parts of the same runway or on other runways at the airport may be different. RVR is the objective standard used to determine takeoff and landing minima for Category II approaches.

Mr. R. L. Orcutt, a controller in Vancouver International Tower, told the Commission about problems with the RVR. This is an excerpt from his July 10, 1979 memorandum to Mr. W. J. Reid, an equipment specialist with Vancouver Air Traffic Services:

"... The historical record of RVR faults involves, in the majority of outage reports, readout information less than actual conditions. Some of the causes for these types of faults have been intermittent bulbs in the transmissometer units, dirty lenses in transmissometer units, loose computer card connections, equipment out-of-calibration and unknown irregularities.

3. On November 6, 1976, it was discovered that a considerable difference in RVR readout information could occur after the day/night reference change. Investigation at the time revealed that there is no background reference for transitional twilight periods so the readout information is either too high on the night reference or too low on the day reference during these periods. At this time, readings on the night reference were consistently in the 2800 ft, 3000 ft range while after the change to the day reference readings were consistently in the 1800 ft to 2000 ft range with no readings in excess of 2000 ft.

4. On November 10, 1976, a fault was observed in which the RVR displays a higher reading than actual visibility conditions. During a period of consistently low visibility during the RVR 'A' was displaying 1400 ft readings with the runway light setting on Strength 5. A reading of 5500 ft was displayed after runway light setting was reduced to Strength 3. Subsequent readings were 1200 ft and 1000 ft.

On November 11, 1976, this type of fault occurred again after a runway light setting change. During a longer period of consistently low (600 ft, 800 ft) readings, where the first RVR reading after the light setting change increased to 2600 ft. This 2600 ft reading remained on the display for one full cycle, until the next normal reading of 800 ft. In order to determine if this high reading was a one time fault, a series of identical runway light changes were repeated with the same described results. Investigation of this problem revealed that, contrary to all other information available, the system does not stabilize until after the first (possibly second) cycling period.

5. Possibly the most serious fault in the system is with the Electro-Mechanical Drum Displays which do not always translate the system information accurately into display information. Specifically, on April 24, May 17 and June 16, 1979, the two tower RVR 'B' displays did not simultaneously present identical information. Investigation resulted in the probable cause for this fault being 'sticky' display drums.

6. After a complete RVR systems maintenance examination, both RVR systems were declared serviceable on July 4, 1979. Less than 24 hours later, readings on the 'A' system displays of 52+ and 10+ were observed. No explanation for the cause of these two faulty readouts has been obtained; no maintenance was being performed at the time.

7. Any faults in an RVR system which provide readings of less than actual conditions may be considered as 'safe' errors. Faults which occur resulting in readings which indicate visibility conditions are better than actual conditions are dangerous should they be used to determine whether a particular operation, landing or takeoff, is to be attempted."

Because the controllers determined the RVR to be unserviceable, they suspended Category II operations. Headquarters responded with the following telegram from the Director General, Civil Aeronautics:

"... UNLESS THERE IS UNMISTAKEABLE EVIDENCE AT YOUR SITE THAT RVR SYSTEMS ARE OUTSIDE DESIGN TOLERANCES AS DETERMINED BY A QUALIFIED TECHNICIAN, AIR TRAFFIC CONTROLLERS ARE TO CONTINUE TO PASS RVR TO PILOTS USING RVR EQUIPPED RUNWAYS..."

The effect of this message is that the qualified technician rather than the controller is to judge whether equipment is serviceable.

An August 28, 1979 letter from the CATCA Vice-Chairman to the Chief of the Vancouver Tower summarizes their position:

"For the past few months Category II operations have not been authorized at Vancouver due to unreliable RVR readings. Recently the technicians have made numerous adjustments and modifications and subsequently have declared the RVR's as serviceable. The tower personnel, however, continued to log false RVR readings and refused to reinstate Category II. A directive was issued from Ottawa stating that if a qualified technician declares the RVR's serviceable they are to be considered as such and Category II was to be authorized. We now understand, that despite continued and obviously false readouts, Category II operations are now authorized at Vancouver.

We still feel that the RVR system is unreliable and wish to go on record as stating that we will use the RVR as directed by Ottawa but feel the RVR system is not safe. We also request that a copy of this letter be placed on all controllers files and remain there until we are satisfied that the RVR system is once again reliable and safe to use."

In its brief to the Commission on behalf of airline pilots, CALPA questioned the assumptions used in reaching the RVR measurement:

"... The assumptions include values for light strengths, cleanliness, etc., and also a degree of uniformity of atmospheric obscuration over a large area. In effect, the RVR passed to the pilot is based on the assumption that the obscuration is uniform over an area centred on the transmissometer and with a radius equal to the value passed. This can be misleading when the obscuration is not uniform. In the case of a long runway with just two transmissometers for example, the transmissometer information may indicate

poor visibility at the touchdown end and quite good visibility at the rollout end but will not indicate a possibly very dense area around the mid-point where visibility could be nil.

In the U.S., three transmissometers are required for runways in excess of 8,000 feet. The three transmissometers are designated 'A' -touch down, 'B' - mid-point (of the runway), and 'C' - roll-out (at the roll-out end of the runway). For visibilities between 1,600 and 1,200 feet RVR, only 'A' and 'C' are required, except that 'B' is required for runways in excess of 8,000 feet. For the take-off down to 700 feet RVR both 'A' and 'C' are required.

In Canada, there is no 'C' designated RVR system; however, from sampled runways (Attachment 14B) there appears to be a random placing of the 'B' designated transmissometer such that, in some cases (e.g. Runway 05R at Toronto), it is close to the mid-point of the runway, yet in others (e.g. Runway 08 at Vancouver), it is located near the roll-out end of the runway.

The Canadian regulations for Category II operations, for which minima are a Decision Height and RVR of not less than 100 feet and 1,200 feet respectively, state that RVR reporting systems must be operative at the Touchdown and Roll-Out areas. They also state that the last reported RVR value for the touchdown zone ('A') and the mid-point zone ('B') should be at or above the approved minimum, which is as low as 1200 feet.

For 700 feet RVR take-off, the Canadian regulations state that the two operative transmissometers must be the touchdown zone ('A') and the roll-out end - called 'B'!

One carrier has applied for approval to operate to Category IIIa minima (RVR as low as 700 feet), yet only two transmissometers are specified, the touchdown zone 'A' and mid-point 'B'.

These anomalies in the current regulations aside, the Canadian Air Line Pilots Association feels that safety would be enhanced if all runways in Canada over 8,000 feet in length were equipped with three transmissometers."

The Department responded to the RVR problem by developing a new solid-state rather than mechanical readout for the air traffic controller. The transmissometer itself has also been redesigned by the Department. Mr. J. Belcher, Director of Telecommunications and Electronics Branch, said of their new system, "Other countries have other types of systems; again some are good, some are not that good. This one we feel will solve the problem for us here in Canada".

As has been noted, the position of CATCA was to dispense with RVR information until the new system has overcome these problems. However Captain A. Beatty, Chairman of

the CALPA All-Weather Operations Committee, and Captain R. Daley, a former air traffic controller, were questioned about the inaccuracies of the RVR:

"Q Well, you know you've actually experienced its inaccuracies?

CAPTAIN BEATTY: Right.

Q Given those inaccuracies, would you rather have it or not have it?

A Well, I'll take the bull by the horns, I would rather have it.

CAPTAIN DALEY: No doubt about it. As I say, it is a guide regardless. You also have pilot reports from people landing prior to. It's part of the picture in a sense.

CAPTAIN BEATTY: I would rather have three of them, mind you."

I note in passing that technical problems are not the only ones affecting the RVR. At the time of the hearings in Cranbrook, the Cranbrook RVR although equipped to operate, was shut down because the steps up to the transmissometer were said to be too steep for employees to climb safely.

In the brief presented by Mr. Edward D. Jensen on behalf of the Air Ops Group, the following was submitted:

"Administrative decisions that alter the intent or meaning of the Air Regulations or ANO's only serve to confuse both CAIs, operators, and individuals. All must undergo the same flight tests and demonstrate, to the same standards, the knowledge and skill necessary to operate an aircraft under IFR conditions. However, they then soon discover that some other operators and pilots have been authorized to lower limits in accordance with either the guidelines established in December 1977, or the Canadian Business Aircraft Association manual. (Non-commercial operators must subscribe to the CBAA manual).

The difficulty with enforcement arises because none of the policies, guidelines or manuals are enabled pursuant to the Air Regulations. Nor do the agencies involved in enforcement have access to a readily available list of the operators and individuals authorized to lower limits by administrative directive. It is not surprising to find that these agencies experience total frustration when they learn that a weather infraction report is not acted upon because the individual who operated to lower limits did so with the authorization of a letter from Transport Canada but without the benefit of legal authority.

This problem has been relieved as a result of a decision recently transmitted by memorandum from DGCA to all Regional Administrators dated July 15, 1980. However, it is interesting to note that the guidelines developed for those operators and individuals previously authorized to lower limits have not been cancelled nor have they been transmitted in a publication to the balance of the aviation community. Nor has ANO series V no. 22 been amended. Therefore, operators and individuals who were not previously authorized to lower limits may now take advantage of the lower limits by simply meeting the established standards of pilot performance using the minimum equipment set forth in ANO Series V, no. 22.

...

Recommendations

1. The practice of authorizing certain carriers or operators to conduct operations to weather limits other than specified in the Canada Air Pilot should be discontinued.
2. The Canada Air Pilot limits should be based on the facility capability with due consideration given to obstruction clearance limits, missed approach criteria and alternate airport suitability.
3. All operational standards and guidelines for IFR operations including slippery runway and wind conditions, should be published in a manual which is enabled by the Air Regulations."

Pursuant to Air Navigation Order, Series V, No. 31, promulgated on July 5, 1978, the following was enacted:

"5. (1) Subject to subsection (3), no pilot-in-command of an aircraft making an instrument approach under instrument flight conditions to a precision approach runway Category II shall permit the approach to continue past the outer marker of the instrument landing system in use or a radio fix used as the outer marker where the RVR is reported by the air traffic controlling agency to be less than that for which the pilot-in-command and the aircraft are approved."

It is to be noted that it relates only to a Category II runway, but the words "accredited observer" have been replaced by the words "air traffic controlling agency", which does provide an objective standard.

This new provision was also subject to criticism by Mr. Speiran as well as by Mr. Slayter on behalf of the Air Ops Group. Mr. Slayter's recommendations are set forth below:

- "1. Completely re-assess the technology available for operating aircraft in IFR weather conditions. Solicit input from the carriers, the manufacturers, pilots, controllers, their associations, etc. At the conclusion, establish an absolute minimum operating value for ceiling and visibility for both take-off and landing.
2. Install ceilometers and transmissometers as a priority on all runways operated by the Department and equipped for instrument approaches. In a day and age when we can put spacecraft on Mars or install Category II ILS systems of incredible accuracy, I simply do not believe that the technology is not available (at reasonable cost) to constantly assess the ceiling and visibility along a runway.
3. Have monitors in the airport available to ATS, Flight Services, etc., that will activate an alarm once the ceiling and/or visibility drops below the predetermined values for a specified time period.
4. ATS or Flight Services will then notify any aircraft wanting to take off or land on that runway that it is closed due to weather and available only in an emergency.
5. Aircraft landing on or taking off from this runway after notice of closure would be in violation, period, (except for emergencies).
6. The legislation, of course, would have to be amended to reflect this and to remove phrases like: with the intent to land; unless the required visual reference has been established, etc. I appreciate that there are additional problems associated with such a set up, such as different limits for different aircraft, but I think the concept has merit and like any idea, will need revamping to remove some of the rough edges."

Mr. Robertson, on behalf of the Air Traffic Controllers, identified the two alternative approaches which can be considered in determining weather minima as follows:

"The first alternative is to adopt a procedure similar to that in effect in the United States. Simply put, the regulations in that country will not allow a pilot to commence or execute an approach to an airport if the weather is reported to be less than the minima specified for the approach. In this manner there is no doubt about the enforcement of the regulations. Air traffic controllers are not permitted to clear aircraft to land or take-off when the weather is below minima and in effect the airport is closed.

The second alternative is to allow the pilot to use his discretion as to whether he will land or take-off regardless of the reported weather. In effect this is what is occurring in Canada at present despite attempted regulation to the contrary. The rationale behind this option is tied to the fact that most weather phenomena are non-homogenous. While the area of the airport where the weather observation has been made may be below minima, the

runway and approach environment may be at or above minima. For this reason many pilots would prefer to have a 'look-see' at the actual conditions prevailing at the runway, and if they can land or take-off safely, do so."

COMMENT

The July 1978 report appears to be a detailed and carefully considered study of weather minima. In my opinion, the Department should, as the study suggests, revise and update weather minima.

If the pilot is allowed a "look-see", then the weather minima are unenforceable. The following countries are among those that restrict the look-see: Australia, France, Germany, England and the United States. In Canada, the look-see is restricted on Category II runways, but there are only six airports with CAT II. Even at these airports the enforceability is doubtful since the pilot can elect to approach on another runway. To make the regulations enforceable, the look-see must be restricted.

Weather reporting is not totally accurate, but it should be possible to establish the degree of accuracy of a given type of observation. Based upon this degree of accuracy, a formula could be established to restrict the look-see when the weather falls below some established percentage of the weather minima. This would eliminate the common complaint that a ground observer reported the weather, but the pilot disagreed. As well, this would serve as an incentive to maintain the highest standard of weather reporting. The RVR is a recognized objective standard for weather measurement throughout the world, and by way of example I note that the United States has legislated that the RVR must take precedence over visual observation. The International Civil Aviation Organization recommends the use of RVR in reduced visibility and particularly for precision approaches. For these reasons, I believe RVR should be used wherever possible.

The 1978 draft report recommended that a working panel, including representatives for the users, be set up to resolve weather minima standards. The above solution could form part of their mandate. Since the question of aviation safety is the very heart of this discussion, the panel should be set up as quickly as possible.

Finally, the informal practice of authorizing certain carriers and corporate owners to conduct operations to weather limits other than specified in the Canada Air Pilot should be discontinued. If in some cases lower limits should be allowable, then the conditions and qualifications attached to the exercise of such a privilege should be published. The present practice creates a confusion in the enforcement of the weather minima provisions and encourages other pilots to land or take off contrary to the weather minima provisions.

With clearly stated and duly enacted weather minima provisions, enforcement can be achieved and the risk of accidents reduced.

PART X

CONCLUSIONS

It is now generally accepted that it is the responsibility of government to enact safety regulations providing for sanctions if they are breached. The paramount objective of enforcement is to achieve compliance with the regulations in order to ensure safety. There is no doubt that compliance can be achieved by various methods. A thorough educational program and a conciliatory attitude will often obtain compliance by those who are conscious of safety and are mindful of their obligations to comply with the law.

It is apparent that such a program will not reach those who do not have such instincts. There are many who, for economic advantage or because of recklessness, exhibit no regard for the safe operation of aircraft.

HEADQUARTERS' POLICY

What has been disclosed before the Commission is a serious conflict as to the best method of obtaining compliance with the relevant safety standards. The evidence before the Commission, including the case studies, disclosed that the enforcement policy emanating from headquarters is one designed to obtain compliance by voluntary means. This approach is commendable in those cases where it is apparent that those who have violated the regulations have done so inadvertently, but have exhibited by their past safety record and operational procedures a safety consciousness. In such cases, there would be reason to believe that an educational program and a conciliatory approach would be successful and a safe operation achieved.

The case studies, however, are good examples of the insistence of headquarters to resist vigorous enforcement action even in the most blatant cases. This has left the enforcement agency without clout, and they have thus been unable to put an end to unsafe practices, not only with respect to particular offenders but also as an example and a deterrent to others of like mind.

As is evidenced by what has been set forth earlier, the regions seek a more vigorous enforcement policy.

In response to questions by Commission counsel suggesting that more vigorous enforcement action should have been taken in the many case studies which were the subject of special attention during the hearings, Mr. McLeish made the following statement:

"I'd like to finish on this note: the enforcement process is only a small part of the compliance process and it's compliance that is needed for air safety and you don't get compliance unless you know the facts and you don't collect the facts if you go in and use Gestapo tactics. You've got to go in and be professionals and you've got to work with those that you licence as though they're equals and professionals that are honest. That's the approach that has to be taken and that's the approach I will continue to foster as long as I'm in the position."
(Emphasis added.)

And added:

"What I'm suggesting, Mr. Commissioner, is that I think in this enforcement phase that we have become preoccupied with the question of using the heavy hand, of being policemen, that's not how you obtain the facts and control aviation."

These observations appear to have been directed to Commission counsel and to the many witnesses who were critical of the lack of enforcement and urged for a new direction. No one suggested that enforcement should be attended by the use of "Gestapo tactics", and there was no suggestion by anyone that every violation should be attended by vigorous enforcement action. The basic difference is that the regions seek vigorous enforcement action in serious cases where cooperation in the past has not been successful. Headquarters still appears generally to resist enforcement action even in such cases, and the case studies demonstrated this to be so. The application of this approach in Canada has failed to achieve an acceptable level of compliance.

The matter was considered in the department's own operation review in 1977. In that review it was noted:

"2. The role of other Civil Aeronautical Inspectors needs to be clarified as it relates to enforcement. There seems to be a feeling that enforcement activities should be avoided by other than Inspectors working directly in enforcement. The feedback was received by the Review Team that other inspectors such as Licensing, Training, Air Carrier, Airways etc., feel that their job is not enforcement and they must try to remain as "Good Guys".

3. The concept of 'WHITE HATS/BLACK HATS' within Civil Aeronautics is leading to a split between enforcement and other areas creating a certain amount of hard feelings. Taking the attitude that enforcement is an item to be avoided is forgetting that regulations are for safety purposes and that regulations which are not being enforced could lead to additional accidents. The enforcement of regulations is indeed in itself, accident prevention."
(Empahsis added.)

The present enforcement process that emanates from headquarters does make it appear that enforcement is "an item to be avoided". Headquarters frequently advised the regions, as an excuse for failure to approve enforcement action, that evidence was lacking where the clearest case had been made out.

LACK OF HEADQUARTERS' SUPPORT

The failure of headquarters to support the regions in taking effective enforcement action in those cases where all other procedures have proved to be ineffective and where there is a serious risk to aviation safety has demoralized the enforcement specialists and rendered enforcement ineffective. Aviation safety suffers and accidents occur which could have been prevented.

When Mr. McLeish was being questioned by Mr. Sopinka with respect to the failure of headquarters to support the request of the Central Region for enforcement action against Tomahawk Airways referred to in Case Study No. 5, the following exchange occurred:

"Q That is why I gave you the example, because I wanted to understand whether you took it that far, that this was the work -- you see, this could be understood by regional people that you continue to work it out until the guy finally has an accident and kills the people.

A The final analysis, Mr. Sopinka, the regional people are accountable for what they do. At the same time, they are also a product of the system that hired them and attempted to train them on the job and put them into the kind of environments which I tried to describe this morning.

We recognize that there are short-falls . . ."

In replying that way, I cannot help but feel that Mr. McLeish failed to realize that the conflict arose in that case, as indeed in all the case studies commented upon, when the region had to have the authority of headquarters to take the action proposed by them. It is hardly accurate to say "the regional people are accountable for what they do" in those cases when they are prevented from taking action because they need headquarters' authority to do so.

FEDERAL AVIATION ADMINISTRATION GUIDELINES

In the United States, philosophical differences have also arisen as to the best means of obtaining compliance. It is there referred to as the "Cop v. Coach" theory. In the past it would appear that the "Coach" theory had been prevalent. Of recent date, the Federal Aviation Administration has announced a more vigorous enforcement policy. In a statement reported in the Business and Commercial Aviation Journal (October, 1980), Mr. Langhorne M. Bond, as Administrator of the Federal Aviation Administration, was quoted as follows:

" 'I don't think our sole purpose in life,' Bond went on to say, 'is just to tell people how to do it right. There's an additional dimension to the business, and that is simply hard enforcement -serious, responsible punishment for people who are serious local violators of safety.'

At the same time, Bond cautioned the inspectors 'not to go out on a crusade to file violations in every case.' "

As I noted in Volume 1, the aviation accident rate in the United States has shown a marked decline of late which may be attributed in part to the more vigorous enforcement policy enunciated by the Federal Aviation Administration. Pursuant to Enforcement Policy No. 1000.9C, the Federal Aviation Administration set forth a guideline for enforcement policy which provides in part as follows:

- "1. **PURPOSE.** This order sets forth the agency's policy concerning enforcement of the Federal Aviation Act of 1958, as amended, the Federal Aviation Regulations and the Hazardous Materials Transportation Act and the regulations issued thereunder as they apply to the transportation or shipment of hazardous materials by air.
5. (b) Inherent in the authority to issue any regulations is the necessity of enforcing them. A vigorous enforcement policy is necessary to achieve compliance with the regulations and must forcefully respond to violations. While recognizing the need to foster the development of civil aeronautics, the paramount objective of this policy is to achieve compliance with the regulations in order to assure safety.
- (c) As part of the enforcement effort it is imperative that violations be revealed and addressed at the earliest possible time. Continuing surveillance and prompt effective investigations must be conducted. Enforcement sanctions must be imposed in a manner and in an amount to assure future compliance by the violator as well as others similarly situated. In selecting the appropriate sanction, special consideration should be given to the category of certificate, experience, compliance disposition, and history of previous violations of the individual. If the incident in question is an inadvertent or 'first time' offense of a relatively inexperienced individual and the incident did not present a serious compromise of safety, administrative action is usually warranted. On the other hand, incidents involving individuals with substantial experience or deliberate or reckless or repeat violations should be treated with the full force of the law. In aid of implementing this policy, procedures for selecting between administrative and legal sanctions are contained within this Order. The ability of a violator to absorb a sanction as a cost of doing business must also be considered. The impact of inflation should also be considered in setting the amount of a monetary sanction. At a minimum, sanctions should be chosen and applied in a manner that will prevent violators from profiting from their own violations.
- (d) An inherent objective of our enforcement policy is the prevention of violations. Education and counseling can contribute to that goal. Our efforts should prevent violations before they occur. However, once a violation has occurred, education and counseling should not be viewed as a replacement of more direct enforcement actions."

In my opinion that policy is a useful guideline setting forth a middle course between a policy of education and conciliation and a policy of vigorous enforcement action.

INSPECTION PROCEDURES

One of the major difficulties in the present enforcement process is the invariable practice of giving advance warning to air carriers of proposed audits. In the Northern Ontario Aviation Safety Study Report discussed in Part V of this Chapter, the following comment is made:

"At present, operators are given prior notification of forthcoming Base Inspections. This naive approach gives operators an opportunity to 'clean house', make artificial entries in aircraft logs and other records, and remove any aircraft which may be of questionable airworthiness status. Repeated statements from air carrier personnel and even persons outside the industry, relate stories of aircraft being sent away on the day of the inspection so that they are not available for examination. Clearly the effectiveness of these inspections is negligible, and Transport Canada's reputation suffers. . . ."

Similar comments were reiterated by many others. The practice of giving advance warning of an audit might be appropriate where the audit is routine in nature, and no evidence has been brought to the attention of the Air Administration of possible violations. It is not appropriate as a rule of absolute practice. Where there is evidence of infractions, or where previous audits have discovered breaches of the safety standards, it surely cannot be considered an unfair procedure to conduct an unannounced audit. To give advance warning of such audits in such cases makes the procedure ineffective and time-wasting and diminishes the effectiveness of any enforcement program.

ENFORCEMENT ORGANIZATION

As I have observed, enforcement is given a very low priority in the organization of CATA. It is presently merely a sub-branch under the Director of Licensing and Inspection. This contributes to its lack of effectiveness. Enforcement should play an important and integral part in the aviation safety system. In order to give it the priority it deserves, it is necessary, in my opinion, that it be recognized as a separate branch with its own director.

The sole function of the enforcement branch and of the Director of Enforcement should be the enforcement of the safety rules and the performance of the functions detailed in the recommendations which follow.

In the regions, the status of enforcement should be recognized by the creation of a Regional Director of Enforcement, to whom should be delegated a greater authority to take appropriate enforcement action.

I have also noted that there are insufficient enforcement specialists to enable them to properly carry out their duties, and civil aviation inspectors and airworthiness inspectors do not play an appropriate role in the enforcement process. By the utilization of the civil aviation inspectors and the airworthiness inspectors in the enforcement process, all of whom have a talent to contribute to the enforcement process, there should be no necessity for the hiring of a new group of inspectors to assist the enforcement specialists. In order to prepare all of them to be a cohesive enforcement agency, they should all receive special training in the enforcement process.

I have also commented on the inadequacy of the legal representation afforded to the enforcement specialists, and this could be remedied by the assignment of a lawyer from the Department of Justice to each of the regions on a full-time basis.

LEGISLATION

As has been previously set forth, the present legislation is completely inadequate, and many of the safety standards are presently of doubtful legal validity.

There is also a serious question as to whether those to whom enforcement responsibilities have been purportedly delegated are legally authorized to act. The difficulties, which the present state of the legislation poses for enforcement specialists, have been identified for many years and, yet, the legislation still remains basically unchanged.

The Aeronautics Task Force under Mr. Lafleur has been studying this matter for approximately three years. This study has resulted to date in a series of Concept Papers. The problems are clearly identifiable and have been for a long time. With respect, I cannot help but feel that far too much time has been taken in the preparation of Concept Papers rather than attacking the difficult assignment of redrafting the legislation. The redrafting is what is now urgently needed, and this task should be given the highest priority.

ADMINISTRATIVE PENALTIES

There are many cases where an administrative penalty is the only effective enforcement proceeding. In many cases, and particularly as it affects major carriers, the suspension of an operating certificate, even in the case of a serious breach of the regulations, would be inappropriate having regard to the consequences. Judicial prosecution, although a proceeding to be preserved, has proved in most cases to be ineffective.

Therefore, in addition to the present authority to cancel or suspend a licence, certificate or document of entitlement, the Director of Enforcement should have the authority to impose an administrative fine. The concept of an administrative fine is not novel, but one not generally in use in Canada. It has become a useful procedure in the United States.

The power to impose an administrative penalty would strengthen the Enforcement Branch of CATA in its dealings with carriers. They would have to give greater heed to the power of the Air Administration to enforce the safety rules if faced with the possibility of a substantial fine. It is not without significance that the Air Transport Association of Canada, in its brief to the Commission, endorsed the implementation of an administrative fine.

A CIVIL AVIATION APPEAL TRIBUNAL

An effective enforcement process must give due regard to the rights of those against whom administrative action is taken. At present, there is no effective recourse for those against whom administrative action is taken and who desire to challenge the propriety of the sanction. It is essential, therefore, to make provision for the right of an appeal from all administrative penalties. In order to fully protect the rights of those affected by disciplinary action, the creation of a Civil Aviation Appeal Tribunal is required.

The Civil Aviation Appeal Tribunal should hear all appeals de novo, and the Tribunal should be guided by the rules of natural justice so that the rights of all parties are fully protected.

JUDICIAL PENALTIES

At present, all offences under the Aeronautics Act are punishable by way of summary conviction. As I have noted, the average fine for a violation of the Regulations in 1978 was \$165.00 and for a violation of the Air Navigation Orders \$178.00. In order to demonstrate the serious nature of such offences, the penalties should be substantially increased. In providing the Crown with an option to proceed by way of indictment, it would be possible to obtain greater penalties with respect to the more serious violations and in cases where there have been previous convictions. In cases of judicial prosecutions, the alleged offender would be afforded an ample opportunity of meeting the case put against him by the procedural safeguards inherent in the judicial process. Under such circumstances, it is not appropriate to first proceed by way of a show-cause letter of allegation.

A NEW DIRECTION

Given valid and enforceable legislation and an efficient enforcement organization, little will be accomplished in the absence of a change of policy. What is needed is a new direction so that in the interests of aviation safety, the laws enacted to ensure the safe navigation of aircraft will be more vigorously enforced in cases of deliberate violations. Aviation safety has not been sufficiently considered in the determination of whether to take enforcement action, or in determining what action is to be taken.

Collateral considerations, such as concern about potential political consequences if enforcement action is taken, have too often assumed a paramountcy over aviation safety. Admittedly, in determining what enforcement action should be taken, due regard must be given to matters of public convenience and economic consequences, but in refusing to support a more vigorous enforcement policy, as requested by the regions, headquarters has failed to consider the serious aviation safety implications in the various violations. The enforcement policy of the FAA, reproduced above, is a useful guideline to follow.

Enforcement should play an important role in an accident prevention program. It is presently not doing so, and that is why the aviation community does not take enforcement seriously, and that is one of the reasons why the Canadian aviation safety record is not as good as it should be.

PART XI

RECOMMENDATIONS

ENFORCEMENT REORGANIZATION

(1) Headquarters

1. The creation of a separate Enforcement Branch of the Air Administration headed by a Director of Enforcement.
2. The authority of the Minister to take enforcement action should be delegated to the Director of Enforcement.
3. The function of the Enforcement Branch and of the Director of Enforcement should be the enforcement of the Aeronautics Act, the Air Regulations and subordinate legislation which has the force of law.
4. The objective of the Enforcement Branch should be to obtain compliance with the aviation safety standards lawfully promulgated.
5. The Director of Enforcement should develop a coherent enforcement policy to be published in an enforcement manual provided to all enforcement specialists and should seek to achieve uniformity in all the regions.
6. The enforcement policy should recognize the respective roles of detection, conciliation and imposition of administrative and judicial penalties in obtaining compliance as hereinafter set forth.
7. The enforcement policy should recognize aviation safety as the paramount consideration in determining when and what enforcement action should be taken with due regard to public convenience and economic consequences.

8. The enforcement policy should require that vigorous enforcement action will be taken with respect to all deliberate breaches of the aviation safety standards which derogate from safety.
9. The enforcement policy should set forth that concern about potential political consequences should not be taken into consideration in the determination of enforcement action.
10. The enforcement policy should recognize that the laws will be fairly and equally enforced and that all persons and corporations are equal in the eyes of the law.
11. The CATA/Air Canada Liaison Committee should cease to play a role in pending enforcement proceedings against Air Canada.

Comment

To make certain that enforcement plays its proper role in an aviation safety system, it must receive greater recognition within the Air Administration and a higher priority. What is also needed is a new direction so that in the interests of aviation safety the laws enacted to ensure the safe navigation of aircraft will be more vigorously enforced in cases of deliberate violations. Aviation safety has not been sufficiently considered in the determination of whether to take enforcement action, or in the determination of what action is to be taken.

In making these recommendations, I do not intend any reflection on Mr. Lamont, the Director of Licensing and Inspection. Mr. Lamont impressed me as a very capable and industrious manager and carried out his responsibilities pursuant to the policy guidelines which have heretofore prevailed.

(2) Regions

12. The creation of an Enforcement Branch in every region and headed by a Regional Director of Enforcement.

13. The Regional Director of Enforcement should have the delegated authority to take enforcement action in all matters relating to general aviation and local air carriers.
14. The regional enforcement specialists should be located in an area close to the aviation community, and there should be sub-regional offices in each of the regions to provide a greater presence of the enforcement specialists in the aviation community.

Comment

Enforcement is principally a regional function, and having regard to its importance, there should be an Enforcement Branch headed by its own director in every region. By reason of the location of their offices, there is no presence of enforcement specialists in the aviation community. The very presence of enforcement specialists at situations close to aviation activity could not help but have a salutary effect. This can best be achieved by providing sub-regional offices in each of the regions as well as a regional headquarters.

Enforcement, as it relates to general aviation and to local carriers, can best be carried out within the region, and the region should have full authority to act in such matters. There should be reserved to the Director of Enforcement at headquarters the decision-making authority for enforcement as it relates to regional, national and international carriers.

(3) Manpower

15. There should be the addition of sufficient enforcement specialists to provide each region with not less than three such specialists.
16. An effort should be made to assign one enforcement specialist with special expertise to each of the fields of general aviation, air carriers and maintenance in each of the regions.

17. All civil aviation inspectors and airworthiness inspectors should be utilized in the enforcement process when infractions are detected by them and in a manner useful to the enforcement specialists.
18. All enforcement specialists, civil aviation inspectors and airworthiness inspectors should receive special training in enforcement procedures.
19. The Department of Justice should make available a lawyer in each region who would assist the enforcement organization on a full-time basis .

Comment

There are insufficient enforcement specialists to enable them to properly carry out their duties. The additional manpower assigned to sub-regional offices would also give enforcement a greater presence in the aviation community.

At present, civil aviation inspectors and airworthiness inspectors do not play an appropriate role in the enforcement process. Their talents should be utilized in cooperation with the enforcement specialists. In order to be able to do so, they require special training in enforcement procedures.

Enforcement specialists are appointed without adequate advance training. They should also receive special training easily available with the cooperation of the RCMP and the Department of Justice, which would enhance their ability to perform their duties.

Legal representation has been inadequate and would be improved by the assignment of a lawyer from the Department of Justice to each of the regions on a full-time basis.

The assignment of one specialist to each of the fields of general aviation, air carriers and maintenance, and the provision for counsel in each of the regions is similar to the present Federal Aviation Administration enforcement organization.

ADMINISTRATIVE PENALTIES

20. The enabling legislation should provide for the imposition of the following administrative penalties:
 - (a) The cancellation or suspension of any licence, certificate or document of entitlement issued by or under the authority of the Minister;
 - (b) The levying of a fine by administrative action to be exercised by the Director of Enforcement.
21. The enabling statute should authorize that, in cases of urgency, a temporary cancellation or suspension of a licence, certificate or document of entitlement could be made without notice.
22. Except in cases of urgency, no administrative penalty should be imposed unless preceded by a written notice specifying the breach complained of and a reasonable opportunity has been afforded for a response in writing.

A CIVIL AVIATION APPEAL TRIBUNAL

23. The creation of a Civil Aviation Appeal Tribunal to hear and review all appeals with respect to any administrative enforcement action taken by the Director of Enforcement or the Regional Director.
24. The members of the Civil Aviation Appeal Tribunal should be appointed by the Governor-in-Council and be responsible to the Minister of Transport.
25. The Civil Aviation Appeal Tribunal should be a quasi-judicial body governed by the rules of natural justice.
26. The proceedings before the Civil Aviation Appeal Tribunal should be by way of a hearing de novo.

27. Any suspension of a licence, certificate or document of entitlement should remain in effect pending review by the Civil Aviation Appeal Tribunal.
28. Any administrative fine, subject to appeal, should not be payable pending disposition by the Civil Aviation Appeal Tribunal.
29. The Civil Aviation Appeal Tribunal, in the disposition of an appeal, should have the authority to make such order as it deems appropriate.

Comment

With the creation of a Civil Aviation Appeal Tribunal which would hear all matters de novo, all persons will be accorded natural justice in the appeal proceedings and the rights of all parties fully protected.

It is not contemplated when administrative action is taken by the Director of Enforcement or the Regional Director of Enforcement, that it would be necessary to do more than give notice and afford an opportunity to respond in writing. Provision must be made, however, to have the authority, where time would not permit notice to be given and response to be received, to suspend a licence certificate or document of entitlement without notice. While this may impose somewhat of a hardship, it is contemplated that there would be speedy access to the Appeal Tribunal which would be empowered to lift such a suspension on summary application if safety is not jeopardized by so doing.

JUDICIAL PENALTIES

30. Penalties for the breach of the laws governing aviation safety should be substantially increased, and the more serious offences should be punishable by either summary conviction or by indictment at the option of the Crown.
31. In those cases where it is determined to proceed by way of prosecution, prosecutions should not be preceded by a show-cause letter of allegation.

COOPERATION WITH THE RCMP

32. The Director of Enforcement and the Commissioner of the RCMP should confer with a view to reaching agreement for cooperation in the prosecution of offences under the Aeronautics Act and the subordinate legislation, and for the training of enforcement specialists, civil aviation inspectors and airworthiness inspectors.

Comment

In a Management Review of the Enforcement Section, the following observation was made:

"In accordance with an agreement reached in 1964, enforcement of the Air Regulations and Air Navigation Orders made pursuant to Part I of the Aeronautics Act is the joint responsibility of Civil Aeronautics, MOT and the R.C.M.P.

This is an excellent arrangement but unfortunately neither organization has taken maximum advantage of the communication and co-operation aspects of the agreement. This may be somewhat understandable on the part of the R.C.M.P. as they have many Federal Acts to enforce. On the other hand, it is apparent that in general MOT has not exercised sufficient initiative to develop a strong rapport with R.C.M.P. Divisional Headquarters and detachments.

Regional offices admit they have not fully utilized R.C.M.P. services and expressed a desire to rectify this situation."

The situation remains unchanged. The arrangement varies from region to region, and there appears to have been no effort on the part of headquarters to formalize the relationship. The agreement contemplated would be a major step in the enforcement process in aid of aviation safety.

UNLICENSED CHARTERERS

33. The enforcement agencies of the Air Administration and of the Canadian Transport Commission should coordinate in proceedings against those persons or corporations who carry passengers for hire without a carrier's licence issued by the Canadian Transport Commission and an operating certificate issued by Transport Canada.

34. The enabling legislation should authorize any court, which convicts an offender for carrying passengers for hire without the appropriate licences, to order forfeiture of the aircraft.
35. Any person or corporation who has been convicted of carrying passengers for hire without the appropriate licences should be prohibited from obtaining a carrier's licence from the Canadian Transport Commission or an operating certificate from Transport Canada for a minimum period of one year.

Comment

The evidence disclosed that across Canada persons carry passengers for hire while unauthorized to do so. They are referred to as "chisel charterers". By not complying with the legal requirements, they run a relatively inexpensive operation and do not comply with the safety regulations designed to ensure that the aircraft is properly maintained and safely operated. Apart from the obvious complaint that they are breaking the law in doing so, they unfairly compete with the legitimate carrier which, on occasion, is forced to reduce expenses in a manner which impinges on safety. To date, enforcement efforts by Transport Canada and the CTC have had little impact on this rather flourishing group. Many regional enforcement specialists have deposed to the inept enforcement against the chisel charterers. They also point out that by continuing in this unlawful manner, the chisel charterers are, on occasion, able to establish a case of convenience and necessity and thus obtain the licences to carry out legally their heretofore illegal activities.

The lack of effective enforcement is due in part to the view that it is for the CTC to prosecute for the failure to have a commercial licence while theoretically it is Transport Canada's responsibility to prosecute for the want of an operating certificate. There is no particular coordination of these efforts. Indeed, some regional officials are under the impression that they have no power to prosecute for failure to obtain an operating certificate.

Section 700 of the Air Regulations provides:

"No person shall operate a commercial air service in Canada unless he holds a valid and subsisting certificate issued by the Minister certifying that the holder thereof is adequately equipped and able to conduct a safe operation as an air carrier."

This provision clearly authorizes Transport Canada to initiate proceedings for breach of that regulation. However, since the offender is unlicensed, only judicial proceedings can be taken. When such proceedings have been taken in the past and have been successful, the fines imposed have been minimal and have had the effect of being merely a licence fee to carry on the illegal practice.

The evidence disclosed that chisel charterers create a serious air safety hazard not only to their passengers but also because of the adverse impact they have on their competition. I am, therefore, persuaded that the only true deterrent to such activity is to authorize the court, following a conviction, to direct forfeiture of the aircraft. The normal judicial appellate procedure would be available to any such offender.

AUDIT PROCEDURES

36. A program for the unannounced audit of air carriers should be instituted where there is reason to believe that an operation is being carried on which endangers aviation safety.

REINSTATEMENT OF OPERATING CERTIFICATES

37. No reinstatement of an operating certificate following suspension should be granted without a careful inquiry by the enforcement agency to satisfy itself that the matters which brought about the suspension had been corrected, and there is reasonable grounds to believe that the operator will in future comply with the safety standards.

Comment

The practice of reinstating an operating certificate solely on the basis of an undertaking to comply with safety standards in future is an inadequate method of ensuring future compliance with the safety standards. The case of Tomahawk Airways is a good example of an operating certificate being reinstated merely on the basis of a letter of undertaking. The consequences of the reinstatement in that case were tragic.

LEGISLATION

38. The Aeronautics Act, the Air Regulations and subordinate legislation should be redrafted, simplified and consolidated.
39. The enabling statute should specifically authorize the Minister to delegate his enforcement authority to appropriate officials and to specify those who may in turn sub-delegate such authority.

Comment

I have noted that the present legislation is completely inadequate. Many of the safety standards are of doubtful legal validity. They are framed in ambiguous language, are complex and are dispersed amongst a plethora of documentation.

I have also noted that those who presently have been given delegated authority may not be lawfully empowered to act.

I have stressed how urgent it is for the task force headed by Mr. Lafleur to revise the legislation. In doing so, I would hope that the task force would take advantage of full consultation with all those in the aviation community who could contribute to the enactment of clearly stated, precise and enforceable legislation.

WEATHER MINIMA

40. The standards as regards weather minima in precision and non-precision instrument approaches should be revised and up-dated as suggested in the 1978 Departmental study entitled "Investigative Analysis of Instrument Approach and Takeoff Minima, Phase I".
41. In redrafting the legislation, an objective standard with respect to weather limits should be observed.
42. The look-see practice as it applies to weather minima should be restricted for all precision and non-precision instrument approaches, other than in cases of emergency.
43. With the adoption of enforceable weather minima, a sustained effort should be undertaken to enforce these minima.
44. Any authorizations to certain carriers and corporate owners to conduct operations to weather limits other than as prescribed by regulation should be discontinued.
45. Wherever possible, precision instruments for objective weather reporting, such as transmissometers, should be installed at airports where the traffic warrants.

PROPOSED RULE CHANGES

46. A procedure should be instituted for advance notice of proposed rule changes affording those affected an opportunity to be heard before the change is implemented.

Comment

There is presently no procedure wherein those who will be affected by proposed rule changes are given advance notice and an opportunity to be heard before implementation. A serious objection was taken as to the absence of such a procedure. The recommendation is in conformity with the practice of the Federal Aviation Administration.

CHAPTER II

AIRWORTHINESS

INTRODUCTION

As was noted in Volume 1 of this Report, over the latter years there have been approximately 700 aircraft accidents per year in Canada, and one in seven is a fatal accident. On a national basis encompassing all flying activity, the machine has been a contributing factor in 13% of fatal accidents and in 30% of non-fatal accidents.

Between 1970 and 1979 there were 2,099 accidents involving commercially registered aircraft having a gross take-off weight of 12,500 pounds and under, and 167 accidents over the same period involving commercially registered aircraft with a gross take-off weight of over 12,500 pounds. In the years 1976-79 the machine was a contributing factor in 48% of the accidents involving commercially registered airplanes of over 12,500 pounds, and in 29% of the accidents involving commercially registered airplanes of 12,500 pounds and under.

When the machine is described as a contributing factor, an airworthiness problem has been detected. Although far from being the most common contributing factor in accidents, statistics disclose that airworthiness deficiencies are significant.

"Airworthy" as defined in the Air Regulations means "in respect of an aircraft or aircraft part, in a fit and safe state for flight and in conformity with the standards of airworthiness established by the Minister in respect of that aircraft or aircraft part". Initially, an aircraft is airworthy if it is determined that by its design and manufacture it meets accepted standards for safe flight, and, thereafter, if it is maintained in such a condition.

In its recent study relating to Airworthiness Certification with respect to large passenger aircraft used by the major commercial airlines, the National Research Council of the United States concluded as follows:

"Aircraft safety demands a 'forgiving' design that is tolerant of failure, careful production that is of the highest quality, and excellent maintenance that gives painstaking attention to detail throughout the life of the airplane. The rare fatal accident that involves airframe or equipment is almost without exception the result of a failure of at least two, and occasionally all three, of these factors."
(Emphasis added.)

A separate phase of the Inquiry was devoted to the broad subject of Airworthiness because of its significance. In addition to the research made by the Commission, 33 days of the public hearings were taken up with this subject, 31 witnesses were heard and 102 exhibits submitted. I have selected those issues which appear to me to have been the most important of those raised. Many other matters were discussed and were forcefully brought to the attention of the Air Administration. I am hopeful that the very public airing of these problems has put into motion procedures for improvement, but time does not permit detailing all of them in this Report.

PART I

AIRWORTHINESS LEGISLATION

The duties of the Minister of Transport to prescribe airworthiness standards and his authority to do so are to be found principally in the Aeronautics Act, the Air Regulations, the Air Navigation Orders and the Engineering and Inspection Manual. I reproduce below the more pertinent provisions from the various legislative sources:

DUTY AND POWER OF THE MINISTER

Aeronautics Act:

- "3. It is the duty of the Minister
- (a) to supervise all matters connected with aeronautics;
 - (l) to consider, draft and prepare for approval by the Governor in Council such regulations as may be considered necessary for the control or operation of aeronautics in Canada, including the territorial sea of Canada and all waters on the landward side thereof, and for the control or operation of aircraft registered in Canada wherever such aircraft may be;"

CERTIFICATION OF AIRCRAFT

Aeronautics Act:

- "6. (1) Subject to the approval of the Governor in Council, the Minister may make regulations to control and regulate air navigation over Canada, including the territorial sea of Canada and all waters on the landward side thereof, and the conditions under which aircraft registered in Canada may be operated over the high seas or any territory not within Canada, and, without restricting the generality of the foregoing, may make regulations with respect to
- (b) the registration, identification, inspection, certification, and licensing of all aircraft;"

REGULATIONS

Aeronautics Act:

"6. (2) Any regulation made under subsection (1) may authorize the Minister to make orders or directions with respect to such matters coming within this section as the regulations may prescribe."

POWER TO PUBLISH AN ENGINEERING AND INSPECTION MANUAL

Air Regulations:

"211. (10) The Minister may cause an Engineering and Inspection Manual to be published and maintained in which the procedures and other matters prescribed pursuant to subsection (9) are set out."

MANDATORY NATURE OF ENGINEERING AND INSPECTION MANUAL

Air Navigation Order, Series II, No. 3:

- "3. A flight permit may only be issued in respect of a private aircraft that
- (a) is of a type for which a certificate of airworthiness may be issued pursuant to Part II of the Air Regulations;
 - (b) is of a type that has been accepted for use as a military aeroplane and has been approved by the Minister;
 - (c) was an aeroplane formerly used in the military service of Canada, the United Kingdom or the United States and has been issued with a certificate of airworthiness in any one of those countries;
 - (d) is an ultra-light aircraft constructed in accordance with the requirements of the Engineering and Inspection Manual; or
 - (e) is an aircraft, other than a helicopter, that has been approved by the Minister.
5. A flight permit issued in respect of a private aircraft, other than an ultra-light aircraft, shall not be in force if that aircraft has not been
- (a) maintained, repaired, modified and overhauled as prescribed in the Engineering and Inspection Manual, and

- (b) certified as serviceable in the aircraft journey log required under Part VIII of the Air Regulations, within the interval set out in Column II of an item of the schedule in respect of the type of aircraft set out in Column I of that item by
 - (i) a qualified aircraft maintenance engineer,
 - (ii) an authorized representative of a company that has been approved by the Minister for the purpose of inspecting and certifying the serviceability of aircraft, or
 - (iii) any person approved by the Minister for the purpose of inspecting and certifying the serviceability of aircraft.

6. A flight permit issued in respect of an ultra-light aircraft shall not be in force unless that aircraft has been maintained, repaired, modified and overhauled as prescribed in the Engineering and Inspection Manual.

8. A flight permit issued in respect of a private aircraft, maintained, repaired, modified or overhauled and certified as serviceable in compliance with section 5 or maintained in a serviceable condition in compliance with section 6, shall expire on the anniversary of the date of issue of that permit where the Condition and Conformity Inspection procedure prescribed in the Engineering and Inspection Manual has not been completed during the sixty day interval immediately preceding that anniversary."

Air Navigation Order, Series II, No. 4:

- "3. (1) Every certificate of airworthiness issued in respect of an aircraft is issued on condition that
- (a) the aircraft will be maintained in accordance with a maintenance program that
 - (i) meets the standards for the maintenance of aircraft established by the Minister pursuant to subsection 211(8) of the Air Regulations, and
 - (ii) follows the procedures for the determination of the airworthiness of aircraft prescribed by the Minister pursuant to subsection 211(9) of the Air Regulations and set out in the Engineering and Inspection Manual; and
 - (b) an entry will be made in the Aircraft Journey Log of the aircraft by an authorized person, certifying that the aircraft is

- (i) airworthy, or
- (ii) released for return to service,

whichever is applicable, at the times and in accordance with the procedures set out therefor in the Engineering and Inspection Manual.

- (2) for the purpose of paragraph (1)(b), 'authorized person' means
 - (a) a person who holds a valid aircraft maintenance engineer licence, issued under the Air Regulations authorizing him to certify that the aircraft is airworthy or released for return to service; or
 - (b) a representative of a company or any other person who is authorized under the Engineering and Inspection Manual to certify that the aircraft is airworthy or released for return to service.

4. (1) Subject to subsection (2), every certificate of airworthiness issued in respect of an aircraft expires on the anniversary of the date of issue of the certificate unless, during the sixty day period immediately preceding such anniversary, the Condition and Conformity Inspection procedure set out in the Engineering and Inspection Manual has been completed in respect of the aircraft.

(2) Subsection (1) does not apply to a certificate of airworthiness issued in respect of an aircraft that is maintained in accordance with a continuous maintenance system that conforms to the standards of maintenance established by the Minister pursuant to subsection 211(8) of the Air Regulations."

CERTIFICATES OF REGISTRATION

Air Regulations:

"207. Upon the registration of an aircraft under this Part, a registration mark and certificate of registration shall be issued and delivered to the owner in the manner prescribed by the Minister."

CERTIFICATES OF AIRWORTHINESS

Air Regulations:

"211. (2) The Minister, upon being satisfied that an aircraft conforms to the standards of airworthiness established in respect of that aircraft, may issue a certificate to be known as a certificate of airworthiness, in a form prescribed by the Minister."

REGISTRATION

Air Regulations:

"204. The Minister may, subject to this Part, register any aircraft under this Part as a commercial aircraft, private aircraft or state aircraft."

AIRWORTHINESS STANDARDS

Air Regulations:

"211. (1) The Minister may establish standards of airworthiness for aircraft, including requirements in respect of the design, construction, weight, instruments and equipment of the aircraft and any other matter relating to the safety of such aircraft."

JOURNEY AND TECHNICAL LOGS

Air Regulations:

"826. (1) Every owner of an aircraft registered under these Regulations shall maintain for that aircraft an aircraft journey log and an aircraft technical log.

(2) The Minister may, by order, prescribe the form of the aircraft journey log and the aircraft technical log to be maintained pursuant to subsection (1) and the particulars to be entered in such logs."

SUSPENSION OF CERTIFICATE OF AIRWORTHINESS

Air Regulations:

"212. The Minister may, if he has reason to believe that an aircraft is unsafe for flying, suspend the certificate of airworthiness or flight permit issued in respect of that aircraft."

TYPE APPROVALS

Air Regulations:

"214. (1) An aircraft type approval may be issued by the Minister in respect of any type of aircraft that in his opinion complies with standards of airworthiness approved or established by the Minister.

(2) An aircraft noise type approval may be issued by the Minister in respect of any type of aircraft manufactured in Canada that in his opinion complies with noise emission standards of Annex 16 to the Convention on International Civil Aviation for that type of aircraft."

EXTRAORDINARY REPAIRS

Air Regulations:

"220. Where any Canadian aircraft is damaged to such an extent that repairs other than ordinary running repairs or replacements are necessary, the owner or pilot-in-command thereof shall notify the Minister forthwith, giving full particulars of such damage."

EQUIPMENT STANDARDS

Air Regulations:

"216. (1) The Minister may make orders or directions

- (a) prescribing standards for flight instrument and equipment systems necessary for the safe operation of any aircraft during VFR flight or IFR flight whether by day or by night; and
- (b) for the installation of such systems.

217. The Minister may make orders or directions prescribing such additional requirements in respect of the equipment and maintenance of any aircraft as he considers necessary by reason of the conditions under which the aircraft is operated."

OFFENCES

Air Regulations:

"210. No person shall fly or attempt to fly an aircraft unless there is in force in respect of that aircraft,

- (a) a certificate of airworthiness issued under this Part or under the laws of the country in which the aircraft is registered, or
- (b) a flight permit issued under this Part,

and unless all conditions upon which the certificate or permit was issued have been complied with. /

216. (2) No person shall operate any aircraft unless it is equipped with approved, serviceable and functioning flight instrument systems sufficient to enable the flight crew members to

- (a) control the flight path of the aircraft;
- (b) carry out any required manoeuvre; and
- (c) observe the operating limitations of the aircraft.

218. No person shall fly or attempt to fly any aircraft unless

- (a) the weight of the aircraft and its load does not exceed the maximum permissible weight specified in the certificate of airworthiness or flight permit;
- (b) the load is properly disposed in accordance with the conditions of the certificate of airworthiness or flight permit;
- (c) the equipment and any cargo carried are secured so as to prevent shifting in flight and are not so placed as to block or restrict the exit of passengers in an emergency;
- (d) the required emergency equipment is carried on board and is in good condition; and
- (e) the aircraft is safe and fit in all respects for the intended flight.

219. Every operator engaged in private or commercial air operations shall permit a person authorized by the Minister, when required by that person, to have access to and to inspect and examine all parts of the premises, aircraft, equipment and records used in such operations and to make such inquiries as he deems necessary for the purpose of this Part.

220. Where any Canadian aircraft is damaged to such an extent that repairs other than ordinary running repairs or replacements are necessary, the owner or pilot-in-command thereof shall notify the Minister forthwith, giving full particulars of such damage.

221. No person shall certify as airworthy or serviceable any aircraft or aircraft part that is not airworthy or serviceable.

826. (1) Every owner of an aircraft registered under these Regulations shall maintain for that aircraft an aircraft journey log and an aircraft technical log."

INSPECTIONS

Air Regulations:

"211. (9) The Minister may prescribe procedures for the determination of the airworthiness of aircraft and aircraft instruments and, for such purpose, may prescribe

- (a) the frequency of inspections;
- (b) the responsibilities of inspection, maintenance and other personnel;
- (c) the methods of servicing, maintenance, overhaul, repair and modification of aircraft;
- (d) the design, construction and airworthiness certification of aircraft; and
- (e) such other matters regarding airworthiness as the Minister deems necessary."

COMMENT

It is to be noted that the airworthiness standards which are the minimum standards for the fitness of an aircraft are not to be found in the Aeronautics Act which is the enabling statute. The principal source of airworthiness standards is to be found in the Engineering and Inspection Manual as well as other ancillary legislative instruments, such as the Air Navigation Orders.

The explanation for the manner in which airworthiness standards have been developed in Canada can be gleaned from the following portion of a brief submitted by Transport Canada:

"Due to the rapid development of aeronautical technology and the increase in complexity associated therewith, the task of maintaining a commensurate system of certification has also been increasingly complex. In this regard control of standards and procedures respecting airworthiness and fitness for flight is to a considerable extent dependent upon the information and mandatory procedures contained in the ENGINEERING AND INSPECTION MANUAL which is enabled by AIR REGULATIONS 211(10). These procedures are mandatory to the extent that procedures prescribed therein are invoked by AIR NAVIGATION ORDERS Series II, No. 3 and No. 4. The ENGINEERING AND INSPECTION MANUAL has become critically essential to the determination of airworthiness of aircraft in that it translates the generalities of certain pertinent regulations and orders into specific requirements expressed in technical terms. It would be virtually impossible to comply with legislated aircraft certification requirements without reference to the ENGINEERING AND INSPECTION MANUAL."

In its brief on the subject of airworthiness, the Aircraft Operations Group commented as follows:

"At present, some aircraft types are issued type approvals, others are not. This discriminatory treatment is dependent on the country of origin, aircraft type categories, and date of issue of type certificate. Present legislation only allows for full certification and certification validation.

1. Aircraft manufactured in Canada are processed through the complete certification program and as such do not present a problem.
2. All foreign aircraft, except those manufactured in the USA, go through certification validation by Canada even after full certification by the country of origin. The Airworthiness Division spends considerable resources on this type of certification program which does not differentiate between the categories of aircraft type being certificated. It appears that substantial resources would be saved by accepting without any validation normal, utility and acrobatic category aircraft manufactured by foreign countries having a history of providing adequate aircraft type certification.
3. Aircraft from the USA are treated in various ways:
 - a) All normal, utility and acrobatic category, regardless of the date of manufacture, are accepted from introduction into Canada without any certification. The only formal document to

substantiate this acceptance is a bilateral agreement. The USA requires that foreign aeronautical products, even those from Canada, be issued a U.S. type certificate.

- b) All transport category aircraft issued a type certificate prior to 1970 are treated in the same manner as aircraft described in a).
- c) Transport category aircraft issued an aircraft type certificate after 1970 have to undergo a Canadian type validation before introduction into service in Canada. Subsequent to validation these aircraft types are issued an aircraft Type Approval.

When a Transport category aircraft is validated in Canada, it is validated on the basis of the minimum crew requirement in the Flight Manual. Nevertheless, in some cases, companies provide operating manuals which differ from the Approved Flight Manual without following a formal modification procedure. The present validation process does not address this problem. For example, DOT and the segment of the air industry operating large transport category aircraft have introduced a 'junior' pilot to the flight engineers stations without the benefit of an appropriate licence endorsed for the specific type of aircraft. Such an endorsement is nevertheless a requirement set forth in the aircraft type approval as are training and licensing requirements in Air Navigation Order, Series VII No. 2, Part IV and V. The requirements have not been met by ordering companies to provide training followed by a written examination for the junior pilot who does not have an appropriately endorsed licence. A second officer does not hold an endorsement of the aircraft on a flight engineers licence, attesting to the fact that he has demonstrated both knowledge and skill appropriate to his station. This situation makes inspections of flight crew licences futile when the CAI cannot ascertain by a review of the crew member located at the flight engineers station, his qualifications to perform those specific duties assigned. In fact, we would submit that the operation of the aircraft without a properly qualified member is in violation of the Air Regulations.

...

Although for nearly a decade the adoption of U.S. airworthiness FAR's have been recommended, confusion has reigned in Canada amongst Civil Aviation Inspectors and Technical Inspectors in the field who have no clear uniform standards to apply and must be familiar with both U.S. and U.K. systems along with all applicable Canadian variations. This is a poor utilization of both personnel and resources and burdens the CAI's T.I.s with a triple workload because of the necessity of referring to three different standards for the purposes of issuing Certificates of Airworthiness and monitoring and assessing their continued validity. . . .

Any standards which do exist are hidden in various publications such as the E & I Manual and Aeronautical Engineering Staff Instructions. They are not readily available and retrievable to all personnel concerned with their application and enforcement. . . .

The E & I Manual is confusing in format and contains standards as well as procedures which make it difficult to distinguish one from the other. Also, it does not provide effective control over the distribution and quality of airworthiness directives.

...

An aircraft Type Approval is issued to confirm that the type design, manufactured product and maintenance program meet minimum safety standards. Hence, a condition exists that no aircraft be issued a Certificate of Airworthiness unless that aircraft has been Type Approved.

Although Canadian legislation does not address itself to this requirement the U.S. legislation does, e.g., FAR 21.175. The United States and Canada's bilateral agreement to accept each other's product subject to special conditions is also not supported by Canadian legislation, although again it is covered by FAR 21.29."
(Emphasis added.)

The Air Transport Association of Canada noted the difficulty of the present state of airworthiness legislation with the following comment:

"CLEAR AND DEFINITIVE REGULATION

It is the position of ATAC that a complete reorganization and consolidation of existing airworthiness legislation is required.

While we have discussed this problem in regard to the Canadian validation program and the adoption of the FAR's, in particular, all airworthiness legislation must be clear, definitive and readily accessible. The current multitude of sources of legislation together with lack of definitiveness can only contribute towards confusion and uncertainty both at the operator and DOT levels."
(Emphasis added.)

Currently, there is no accurate nor uniform statement of Canadian airworthiness standards. This poses confusion and uncertainty not only for the civil aviation inspectors and airworthiness inspectors who are thus impeded in their responsibilities and duties, but also for the manufacturers as well as the purchasers of aircraft. Apart from the safety implications of an inadequate airworthiness arm of the Air Administration, the present state of the airworthiness legislation places unnecessary obstacles in the way of the aeronautical industry.

As I have noted in Volume 1, aviation is an integral part of the economics of Canada, and, on the manufacturing side, contributes a great deal to our export trade. It is essential that everything be done to facilitate the manufacturers and purchasers of aircraft in Canada by providing clear and definitive airworthiness standards and maintenance requirements and, at the same time, ensure that aviation safety is enhanced.

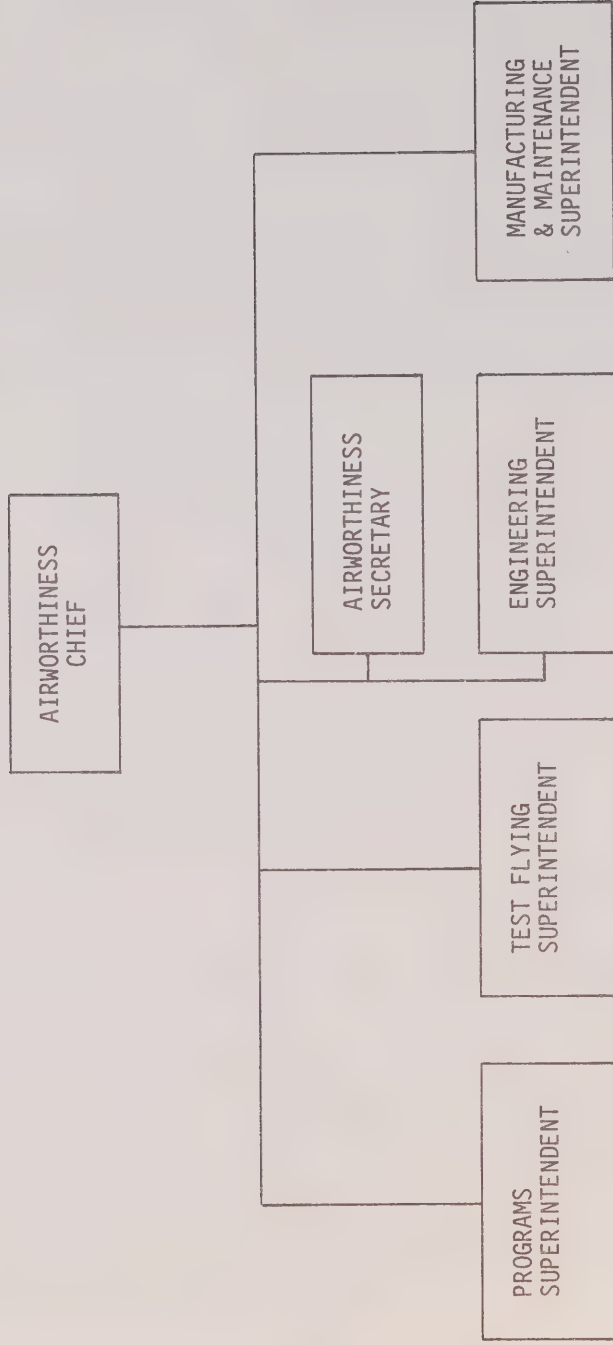
I have already commented on the work of the Aeronautics Task Force and the priority that should be given by it in the revision of the aviation legislation relating to enforcement. There is a similar need for the revision of all the myriad of legislation relating to airworthiness, which should receive an equal priority.

PART II

THE AIRWORTHINESS ORGANIZATION

The responsibility of the Minister of Transport to carry out his duties with respect to the airworthiness of aircraft is discharged within the Canadian Air Transportation Administration by a division devoted to the airworthiness function.

At the time of the hearings on airworthiness, the Airworthiness Organization, within the directorate of the Director General of Civil Aeronautics, was a division run by the Chief of Airworthiness and reporting to the Director of Aeronautical Licensing and Inspection. The structure of the organization was the following:



On November 24th, 1980 the status of the Airworthiness Organization within the DGCA directorate was changed from a division to a branch. Mr. Kenneth D. J. Owen, who had headed the Airworthiness Division, became the director of a new branch reporting directly to the Director General, Civil Aviation.

The Airworthiness Organization seeks to promote, direct and coordinate the development of national policies, programs, systems and objectives in airworthiness matters including those covering the design, manufacture, maintenance and certification of aeronautical products, the approval and auditing of Canadian aerospace companies and operators involved in airworthiness matters, the development of airworthiness understanding with foreign airworthiness authorities, the continuing airworthiness of all aircraft and other aeronautical products used on Canadian registered aircraft or manufactured in Canada, the evaluation of regional airworthiness programs for compliance with headquarters' policies, programs, systems and objectives.

The following extract from a brief presented to the Commission by airworthiness officials of CATA outlines the approach adopted by Transport Canada to fulfill its airworthiness responsibilities:

"The responsibility of the airworthiness function in the DOT is to ensure, to the maximum degree practicable, taking into consideration the manpower available, the public demand, the numbers, and the geography of Canada that domestic and foreign aeronautical products operated for and by the Canadian public are designed, manufactured and maintained in accordance with specified airworthiness requirements; the airworthiness function also includes the responsibility to ensure that those aeronautical products produced for export to foreign countries comply not only with Canadian requirements but also with any additional requirements specified by the importing country; and finally, the airworthiness function includes the responsibility to react to the operating problems that are created as a result of the aeronautical products being in service.

The fundamental principle that applies to the carrying out of the airworthiness function, is that the DOT carry out an 'auditing role', on the aerospace public; airworthiness personnel do not do the job, as in most Western countries they survey, which is the main reason for some countries calling their airworthiness personnel 'surveyors'. We audit rather than do the job for several reasons, but the principle reasons are the limitations on manpower, the integrity of the aerospace industry and the lack of substantiating evidence that demonstrates that airworthiness would be better served if we were directly responsible for doing the job.

The airworthiness function is also carried out via the delegation of airworthiness responsibility to recognized persons and by the licensing of people and Companies. We audit these persons and Companies within practical limitation, to ensure that they are performing their delegated and licensed responsibilities.

The airworthiness function is not carried out perfectly, and it will never be carried out perfectly but the personnel involved, both the industry and DOT, strive to maintain the level of airworthiness that the factors, such as manpower, public demands, environment and changing technological situations allows; when an aeronautical product is declared to be airworthy, it does not mean that the DOT guarantees that unfortunate events will not happen to those who use the products, it merely means that to the best of knowledge of many qualified people, the product is not expected to give trouble when the product is operated by qualified people within the limitations imposed."
(Emphasis added.)

Mr. Owen explained the function of the Airworthiness Branch as follows:

"Well, in terms of satisfying the airworthiness function in the industry, we of course, have other functions to do within airworthiness and that is to liaison with foreign airworthiness authorities to develop standards and procedures and the likes of that.

But in terms of seeing what the industry is doing and how it's doing it against the requirements, it is an auditing function. We do not design airplanes; we see how other people design airplanes against the standards."
(Emphasis added.)

In the report of the National Research Council of the United States, previously referred to, the following passage sets forth the challenge which an effective airworthiness agency meets in determining the airworthiness of large passenger aircraft:

"Production and Maintenance

The manufacture of modern jet transport aircraft is an organizational tour-de-force. Components of the aircraft--wings, tail and landing gear assemblies, fuselage sections, doors and latches, avionic and radio equipment--arrive at the assembly plant from all over the world. In hangars the size of several football fields, work crews tow the airplanes through a dozen or more positions on the production line, until each finished airplane eases from the hangar ready for testing and approval for flights.

Once an airplane is in service, the airline performs myriad maintenance operations on it--daily checks, periodically scheduled maintenance, major overhauls, repairs of unexpected damage and replacement of failed components. The number of aircraft in daily service for each air carrier, the complexity of the airplane, the distances between centers of operations, and the variations in procedures and practices among airlines all figure into a maze of maintenance operations in which millions of actions are performed by thousands of individuals.

As a consequence, there are many opportunities for assuring that each aircraft is built and maintained to established safety standards. With careful workmanship, failures are preventable. By alert examination, errors are detectable. Carelessness and inattention, by contrast, often lead to mistakes and mishaps."

(Emphasis added.)

PART III

AIRWORTHINESS STANDARDS

In Canada, when a domestic manufacturer applies to the Department of Transport for an aircraft type approval, namely, the DOT's concurrence that the manufacturer's design complies with a specific set of airworthiness requirements, the manufacturer must meet the airworthiness requirements against which his design will be assessed. This presupposes a design code against which a manufacturer's design can be tested. As I have noted, there is no accurate or uniform statement of Canadian airworthiness standards. CATA, at the present time, will allow the manufacturer to use either the USA Federal Air Regulations (FAR) or the British Civil Airworthiness Requirements (BCAR), as amended, at the date of application, as a basic design requirement.

The FARs are contained in the Code of Federal Regulations, a United States codification published in the U.S. Federal Register.

The Federal Regulation concerning Aeronautics and Space, part 23 (commonly referred to as Federal Aviation Regulation 23, or FAR 23) is the airworthiness regulation for small aircraft in the field of general aviation.

Section 23.1(a) states:

"This part prescribes airworthiness standards for the issue of type certificates, and changes to those certificates, for small airplanes in the normal, utility, and acrobatic categories that have a passenger seating configuration, excluding pilot seats, of nine seats or less."

Small Aircraft refers to "aircraft of 12,500 pounds or less, maximum certificated takeoff weight".

FAR 23, in great detail, sets out specific airworthiness requirements in the fields of load distribution and weight limits, performance, flight characteristics, controllability and maneuverability, trim, stability, stalls, spinning, ground and water handling characteristics, flight requirements, structure, design and construction, power plant, equipment, and operating limitations.

Special Federal Aviation Regulation 23 (commonly referred to as SFAR-23) applies to any FAR 23 aircraft that is also a reciprocating or turbopropeller multi-engine powered aircraft that is to be certificated to carry more than 10 occupants and that is intended for use in operations under FAR 135, namely, air taxi operations, the transportation of mail by aircraft conducted under a postal service contract, or the carrying in air commerce by any person, other than as an air carrier, of persons or property for compensation or hire (commercial operations) in aircraft having a maximum passenger seating configuration, excluding any pilot seat, of 30 seats or less and a maximum payload capacity of 7,500 pounds or less. In such a case the aircraft to be certificated must then conform to the additional airworthiness standards of SFAR-23.

FAR 25 prescribes airworthiness standards for transport category aeroplanes. Here the criteria is the intended use and the word "transport" is used in the sense of carriage of persons or property as a common carrier for compensation or hire. Here again FAR 25 sets out detailed airworthiness requirements. These standards are more demanding than those of FAR 23, with greater emphasis upon the concept of "fail-safe" features, namely, the assurance of safety through the provision of redundancy. Under FAR 25 a greater obligation is placed upon the manufacturer to demonstrate to the certificating authority that should a component fail, another redundant or backup component is available to permit a safe termination of the flight.

SFAR-41 is an interim standard issued in September, 1979 establishing airworthiness standards for an intermediate aircraft, situated between the normal and transport category. A proposed FAR 24 was not adopted.

FAR 135 (commonly called an operating FAR), namely, a Federal Aviation Regulation that establishes standards for the operation of aircraft, applies to air taxi operations, the transportation of mail by aircraft conducted under a postal service contract, as well as the carrying in air commerce by any person, other than as an air carrier, of persons or property for compensation or hire (commercial operations) in aircraft having a maximum passenger seating configuration, excluding any pilot seat, of 30 seats or less, and a maximum payload capacity of 7,500 pounds or less. The Regulation sets out requirements for flight operations, operating limitations and weather requirements, flight

crewmember requirements and limitations, crewmember testing requirements, aircraft and equipment requirements, operating limitations, and certain maintenance requirements.

FAR 121 is an operating FAR that applies to all commercial operations of large aircraft (over 12,500 pounds) not already covered by FAR 127 (helicopter scheduled carriage), FAR 133 (non-passenger civil rotorcraft) and FAR 135.

While the federal regulations on aeronautics and space number over 1,500 pages, the above referred to FARs, plus FAR 27 (Normal Rotorcraft), FAR 29 (Transport Category Rotorcraft), FAR 31 (Balloons), FAR 33 (Engines), FAR 35 (Propellers), FAR 37 (Technical Standard Order Authorizations), represent the main body of airworthiness regulations as established in the United States.

Obviously, continued advances in the field of aviation technology require that any airworthiness standard be continually monitored and updated. In their study, the National Research Council, discussing the adequacy of the FARs, stated as follows:

"It is in the nature of every complex technological system that all possible risks--even mechanical ones--cannot be anticipated and prevented by the design. Most safety standards have evolved from the experience of previous errors and accidents. Airplanes built in accordance with current standards are therefore designed essentially to avoid the kinds of problems that have occurred in the past and to tolerate operational abuses deemed likely to occur. The high safety performance of the modern jet transport provides assurance that the current standards, which address the risks we now recognize, are sound.

The designer seeks to anticipate and defend against likely malfunctions and hazards that could defeat the component being designed. However, many of the fatal accidents that have occurred with airplanes manufactured by companies visited by the committee have involved rare and improbable combinations of mishaps, aspects of which were outside the 'design environment' of the components in question, such as maintenance-induced damage, undefined weather hazards, and damage sustained outside the operating regimes. To comply with current FAA requirements, the designer of a new aircraft may establish that structural components that are critical to safety comply with the rules by either of two kinds of analyses. One involves the concept of 'safe-life,' which means that a structural component or assembly must be designed to retain its strength and integrity throughout its useful life. Landing gears, propeller blades, and engine fan blades are examples of safe-life parts.

Whenever appropriate, structures may also be designed to satisfy the concept of 'fail-safe.' Here, safety is assured through the provision of redundancy. This means that the designer must show, through a variety of analyses of possible failure modes, that if the fail-safe part is crippled, another redundant or backup part is available to do its job sufficiently, at least to permit a safe landing. For instance, a typical fuselage panel is designed with doubler strips that stop cracks from progressing while the additional members of the panel pick up the loads until the cracks can be detected and repaired, usually at the next scheduled maintenance.

FAA procedures do not normally require the designer to take into account, by analyses, the hazard to one component from the failure of some other component that was designed to meet safe-life or fail-safe standards. This has not been required because to do so would appear to involve a contradiction of the definition of these two structural design basis: why take into account a failure that cannot occur?

These procedures, however, fail to take into account an important consideration: structures designed not to fail when subjected to conditions within the design environment sometimes do fail, usually as a result of hazardous conditions outside the design environment. Examples of such hazardous conditions might include maintenance-induced damage, hard impact by ground servicing equipment, cargo-induced damage, or perhaps even faulty quality control during manufacturing. The simple fact is that during the long life of many fleets of aircraft, with millions of operations, one cannot guarantee that such damage will not occur.

When one goes beyond matters of structure design to consider similar design approaches to aircraft systems, the problems can be compounded. Critical control systems, for instance, are designed so that the probability of failing can be demonstrated to be 'extremely remote.' The convention normally applied to this definition is a calculation showing that the probability of failure is one-in-one-billion (10^{-9}) flights. However, critical control systems also have failed from causes outside the system design environment. The failure of a safe-life or fail-safe structure that surrounds such systems is currently not required to be considered within the system's design environment. Thus it is not taken into account when analysing possible modes of systems failure.

The accident in Chicago involved presumably inconceivable combinations of events: the one-in-a-billion failure of critical control systems caused by the improbable failure of a fail-safe component. That failure, in turn, resulted from maintenance-induced damage not considered within the design environment of either the structural or systems components.

In the committee's judgment aircraft design principles should take into account the potential of structural damage caused by conditions outside the design environment, and should seek to prevent catastrophic effects resulting from such damage. Specifically, the committee recommends that the FAA develop a rule requiring assurance that an aircraft is designed to continue to fly after structural failure, unless that failure itself prevents the aircraft from flying.

There are obviously some kinds of failure--a wing torn off in a mid-air collision--that, by themselves, prevent the aircraft from continuing to fly. In the Chicago accident, however, a primary failure led to a series of secondary failures of flight control systems which, by making it impossible for the pilot to recover, were the actual cause of the accident. It is this kind of situation that justifies the need to go one step beyond the design assurances now required.

The recommendation would require that formal design consideration be given systematically and routinely to the consequences of the possible failure of critical structure and systems, even though these can be shown by analysis to meet design standards presumed to preclude failure. Structural elements or systems that could be rendered critical to continuing flight, because of the initial failure of a primary structure, must be designed to avoid or minimize being crippled or damaged by such initial failures." (Emphasis added.)

In Canada, even though domestic manufacturers are offered the option of choosing either the U.S. or the British standards, most aircraft are designed to meet the requirements of the FARs.

The existence of a codified set of airworthiness standards for aircraft, aircraft engines and aircraft components, as well as operational requirements, is obviously a great advantage to the manufacturer who must build the aircraft, the operator who must operate it, and the regulatory authority who must enforce the standards.

The following schedule prepared by the Department of Transport setting forth the sources of airworthiness requirements is illustrative of the confusing nature of our current airworthiness standards and their source:

"Documentation - Airworthiness"

<u>Document</u>	<u>Reference</u>
1. Aircraft Journey Log Aircraft Technical Log	Section 826(1) - Air Regulations
2. Engineering and In- spection Manual	Section 211(10) - Air Regulations
3. Certificate of Airworthiness	Section 211(2) - Air Regulations
4. Certificate of Registration	Section 204, 207 - Air Regulations
5. Flight permit	Section 211(4) and (5) - Air Regulations
6. Aircraft Type Approval	Section 214(1) - Air Regulations
7. Maintenance Manual	ANOs VII Nos 2, 3 and 6, section 12(2) E&I Manual Part II, 1.10.1
8. Aircraft Flight Manual	E&I Manual Part I, 2.1.1(d) requirement before ATA issued under section 214(1) Air Regulations
Operations Manual	ANO VII Nos 2 and 3, section 31(1) and schedule B, ANO VII No. 6, section 32(1) and schedule B
Operating Manual	
9. Canada Air Pilot	Section 544(1) - Air Regulations
10. Designated Airspace Handbook	Section 503(1) - Air Regulations
11. Airworthiness Directives	authorized-E&I Manual Part II 6.1.2 and mandatory reference 6.1.1
12. NOTAMs	Simply a notification with respect to hazards to flight safety or changes in procedures of an immediate nature. Not specifically authorized in the Air Regulations but is based on the statutory duty of the Minister to provide a safe civil aviation system. This corresponds in part with the Notice to Mariners which are also not

specifically authorized under the Canada Shipping Act.

13. N-AME-AO

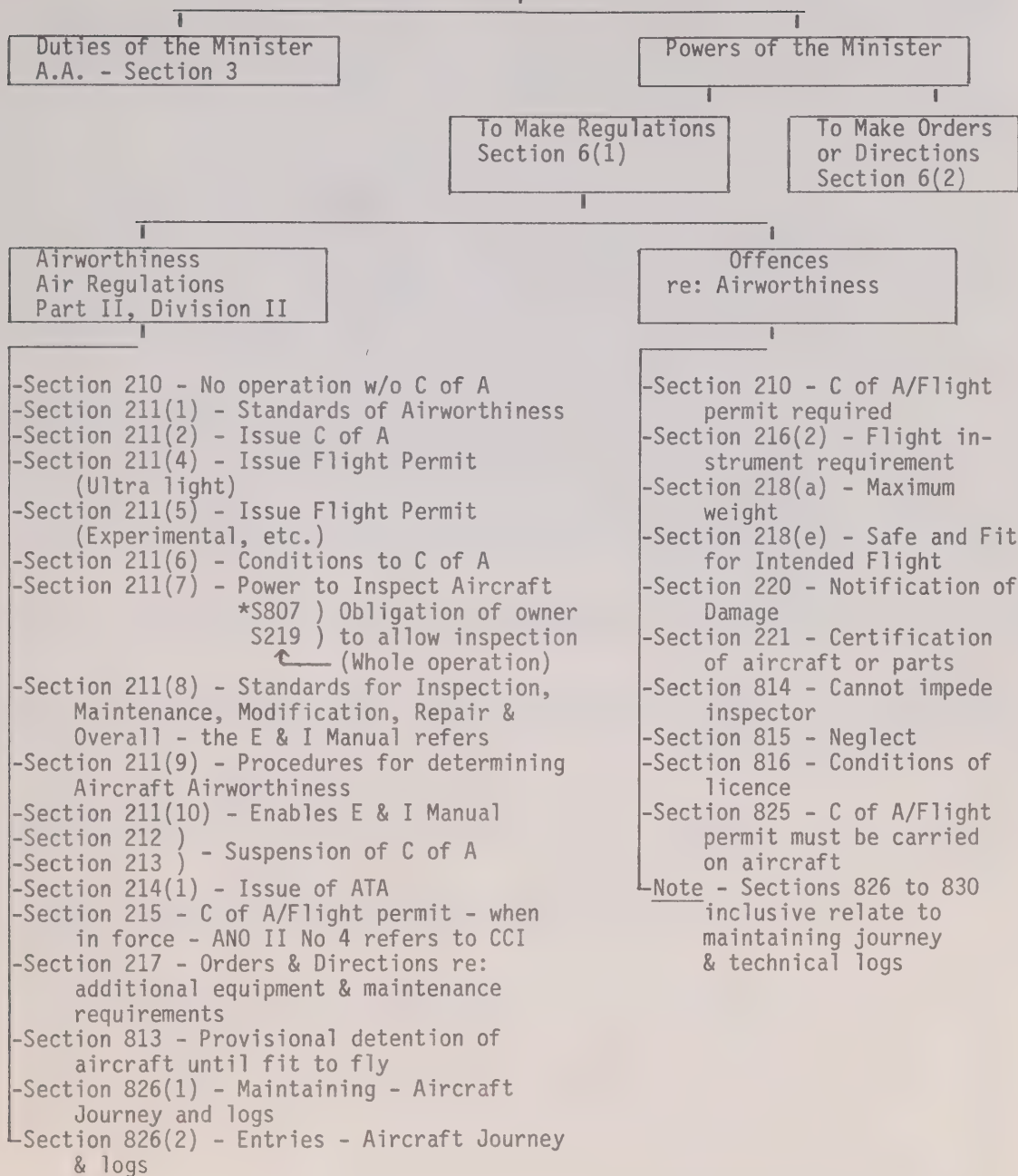
Notice to Aircraft Maintenance Engineers and Aircraft Owners - distributes information of interest to AMEs. Not specifically authorized in the Air Regulations.

14. Personnel Licensing Handbook

E & I Manual Part I, 8.1.1 refers to conditions of AME licence issue ANO IV No. 6 - AME privileges."

The following chart establishes the legislative base in airworthiness matters:

Aeronautics Act - Part I



During the hearings, the Commission learned of the Department's intention to enact airworthiness standards for aircraft, aircraft engines and aircraft components and to replace the Engineering and Inspection Manual with a new Airworthiness Manual. Notice of this intention was published in the Canada Gazette on January 20, 1979. Schedule 1 of that notice contained the following:

"1. The definition 'Engineering and Inspection Manual' in section 101 of the Air Regulations is revoked.

2. (1) Subsection 211(1) of the said Regulations is revoked.

(2) Section 211 of the said Regulations is further amended by adding thereto, immediately after subsection (2) thereof, the following subsections:

'(2.1) The standards of airworthiness in respect of an aircraft referred to in subsection (2) or an aircraft design, aircraft engine design or aircraft component design referred to in section 214 are the basic airworthiness standards listed in subsection (2.2) that are applicable to that aircraft, aircraft design, aircraft engine design or aircraft component design as varied in the manual known as the Airworthiness Manual, January 1, 1980 caused to be published by the Minister pursuant to subsection (10).

(2.2) The basic airworthiness standards referred to in subsection (2.1) are,

(a) for aircraft other than gliders, the standards contained in the following parts of the Federal Aviation Regulations of the United States:

Part 23--Airworthiness Standards--Normal, utility and acrobatic category airplanes, as amended to and including amendment 23-23 (October 30, 1978),

Part 25--Airworthiness Standards--Transport category airplanes, as amended to and including amendment 25-46 (October 30, 1978),

Part 27--Airworthiness Standards--Normal category rotorcraft, as amended to and including amendment 27-16 (October 30, 1978),

Part 29--Airworthiness Standards--Transport category rotorcraft, as amended to and including amendment 29-17 (October 30, 1978),

Part 31--Airworthiness Standards--Manned free balloons as amended to and including amendment 31-3 (February 1, 1977),

Part 33--Airworthiness Standards--Aircraft engines, as amended to and including amendment 33-8 (May 2, 1977),

Part 35--Airworthiness Standards--Propellers, as amended to and including amendment 35-4 (May 2, 1977), and

Part 37--Airworthiness Standards--Technical Standard Order Authorizations, as amended to and including amendment 37-42 (May 2, 1977); and

(b) for gliders, the OSTIV Airworthiness Requirements (September 1976) issued by the Organisation scientifique et technique internationale du vol a voile, (OSTIV), Van Halewijnplein 37, Voorburg, The Netherlands.

(2.3) The Minister may prescribe variations to the basic airworthiness standards listed in subsection (2.2).'

(3) Subsection 211(10) of the said Regulations is revoked and the following substituted therefor:

'(10) The Minister may cause an Airworthiness Manual to be published and maintained in which the variations, procedures and other matters prescribed pursuant to subsections (2.3) and (9) are set out.'

3. Section 214 of the said Regulations is revoked and the following substituted therefor:

'214. The Minister, on being satisfied that an aircraft design, aircraft engine design or aircraft component design conforms to the airworthiness standards, shall issue an aircraft type approval, an aircraft engine type approval or an aircraft component type approval, as may be applicable.

214.1 The Minister, on being satisfied that a type of aircraft manufactured in Canada complies with the applicable noise emission standards of Annex 16 to the Convention on Civil Aviation, shall issue an aircraft noise type approval in respect of that type of aircraft.' "

The proposal to adopt FARs 23, 25, 27, 29, 31, 33, 35 and 37, namely, the airworthiness FARs, caused a considerable debate during the hearings of this phase of the Inquiry. It is to be noted that the proposal of the DOT was to adopt the airworthiness regulations of the United States only, omitting from the proposed enactment the operational FARs previously referred to. It was the Department's position that the adoption of the operational FARs was not necessary because of the existence of adequate operation regulations in Canada. Following a request of this Commission, Mr. Donald E. Lamont,

Director of Licensing and Inspection, attempted to locate the regulations existing in Canada that would equate to those rules contained in operational FAR 121. Mr. Lamont was of course handicapped by the fact that whereas FAR 121 contains all of the rules applicable to the subject, ANO Series VII, No. 2 must be read in conjunction with the Air Regulations, Air Navigation Orders and the Engineering and Inspection Manual. Mr. Lamont presented to the Commission a detailed breakdown of equivalencies and differences. Some operating rules were to be found in flight manuals, and some other sections simply had no Canadian equivalent. By way of example, sub-part J of FAR 121, entitled "Special Airworthiness Requirements", had no Canadian equivalent. This section concerns special airworthiness requirements in the field of cabin interiors, internal doors, ventilation, fire precautions, propeller deicing fluid, pressure cross-feed arrangements, location of fuel tanks, fuel system lines and fittings, fuel lines and fittings in designated fire zones, fuel valves, oil valves, oil system drains, fire walls, flammable fluids, fire extinguishing systems, fire detector systems, fuel system independence, induction system ice prevention, and many others.

Mr. Robert E. Klein, the then Chief Airworthiness Engineer with de Havilland Aircraft, who impressed me with his knowledge of the subject matter, stated the following:

"...when you are trying to upgrade the total system, the only method available is to put into the operating rules that, after today, nobody may operate an airplane unless it has, for example, fireproof material in the inside and more fire extinguishers, and the upgraded standards.

This sounds like an airworthiness standard, but it is in effect a retroactive application. The only way they can apply this is via the operating rules. But they fit together perfectly.

The other thing that is very interesting is that an airplane that is designed on a certain date is operated in a certain manner, as laid down in the operating rules, and another airplane that is designed at a later date has a different set of operating rules. But one caters for the other in such a way that they seem like a great confusion. But they do fit together beautifully, and I admire the talents of the FAA to keep this can of worms sorted out and make it very clear as to just what everybody is supposed to do, and the operators and the designers understand this."

Testifying as to the likelihood that a modification to an airworthiness standard will produce a resulting modification to the operating standard, Mr. Klein stated:

"... You may upgrade one at a time if there is no need to make a corresponding change, but if they are inter-related, then the same amendment can be effective in Part 25 and 121. They are both upgraded simultaneously in the same Notice of Proposed Rule Making, and you get two different amendments to the two different books.

...

The airworthiness rules are frozen. Once you have been certified to a certain basis of certification -- for instance, the 727 that we are still buying new copies of, was designed to the standards of Part 4b. The Series 100 was the initial series and the Series 200 is the later series; but it is still to the original basis of certification, because the type is the 727, and there is nothing to stop them from coming out with a Series 300 and 400 and 600 and 900. For the next 50 years it will still be to the standards of Part 4b. So that there is no way that these later amendments of 25 will ever show up."

Mr. Klein added:

"I think that Canada should not buck this trend and try to establish their own national standard. With all due respect, it probably will be a better standard; but, having achieved that, then we, as a manufacturer, would have the difficulty of trying to negotiate an agreement with, say, Norway, or Japan to accept the Canadian standard and we will have to explain to them what the Canadian standard is.

This is another sort of a variation on the theme. It would be far better, in my opinion, if Canada has ideas about what the standards should be, that they do the same as these representatives from all other countries who attend these FAA review conferences -- prepare their position, submit their comments in writing and go down there with a strong team to debate it.

I know from experience that the FAA listens to us. They respect us. . . ."

COMMENT

There is a need for a definitive code of airworthiness standards for Canada. The absence of such has impeded manufacturers and purchasers of aircraft in pursuing their industrial enterprises as well as the airworthiness agency in carrying out its responsibilities and duties.

Although in theory it would be possible for Canada to draft its own code, this would involve a wastage of expertise, manpower and funds and would in the end be counter-productive. The Federal Aviation Regulations relating to airworthiness standards have

been developed with the benefit of the highest technological expertise and have achieved worldwide authority. Transport Canada has been moving towards the adoption of a series of the Federal Aviation Airworthiness Regulations, but proposes to delete from the Canadian code the Federal Aviation Operational Regulations. I am satisfied that to do so would be a mistake. What is needed is a complete code available from one source. The failure to adopt the Federal Aviation Operational Regulations which are interrelated with the Federal Aviation Airworthiness requirements would lead to future complication and uncertainty and would fail to achieve the necessary objective. Although styled as the operational requirements, the Federal Aviation Operational Regulations include many airworthiness standards and, as is pointed out, the Operational Regulations are an integral part of an airworthiness code. The Operational Regulations update airworthiness requirements and are equally important in contributing to aviation safety. As previously noted, the current Canadian airworthiness standards are to be found in a myriad of documentation. A close study of them may disclose comparable standards to those that now form part of the operational FARs. In many cases, however, there is an absence of identical or equivalent standards. In my opinion the airworthiness FARs and operational FARs should be used and adapted as the model for a Canadian Airworthiness Code.

This would not preclude the Department of Transport from adding special airworthiness conditions suitable for Canadian aviation purposes. Many of these conditions have already been identified and others may be disclosed. For example, following the accident to an Air Canada DC-8 on July 5, 1970, the Department of Transport introduced special airworthiness conditions for DC-8 aircraft operated by Canadian carriers to prevent the accidental deployment of the ground spoilers in flight. These special conditions, both in the field of airworthiness standards and operational requirements, could be added to the code and would be known by manufacturers, both foreign and domestic, in advance.

In this way Canada could adopt a complete system and the present confusion and uncertainty would be eliminated.

It was also pointed out that if an aircraft design is approved and certified to FAR 25 today, it will still be produced twenty-five years from now to FAR 25 as it is written today, despite the fact that FAR 25 may be considerably amended and upgraded during

that period. Obviously, the type approval and certification process is a lengthy one, involving a number of years of planning and testing. Once the decision to design an aircraft is taken, the manufacturer refers to existing standards at the time the aircraft is designed and cannot be expected to constantly redesign its aircraft.

Of particular importance is the distinction for airworthiness standards between aircraft of a gross take-off weight of over 12,500 pounds and those under 12,500 pounds. As has been noted, the fail-safe requirements for an aircraft of over 12,500 pounds gross take-off weight are not made mandatory for aircraft under 12,500 pounds and yet many aircraft with a gross take-off weight of under 12,500 pounds are engaged in the commercial air carrier services in Canada. They are used for commercial purposes by local carriers, and many people are flown in these small aircraft to connecting flights with major carriers.

The de Havilland Twin Otter is an aircraft certified under 12,500 pounds, and there are no mandatory provisions in Canada for the introduction of fail-safe or redundancy features. Although it has been noted that in the United States if the aircraft is to be used for certain commercial purposes, it must meet higher standards.

The validity of the distinction for airworthiness standards based solely on the gross take-off weight was brought into issue during the hearings. In this respect, Mr. Lorne A. Tapp, of Aviation Safety Investigation, was questioned as follows with respect to the following comment included in the Aviation Safety Bureau brief:

"Q ... 'The Chief of Airworthiness stated that he could not be expected to get too overly concerned about Twin Otter accidents because there was no redundancy required in the Twin Otter aircraft systems since the aircraft was certified under 12,500 and therefore he was more concerned with DC-9's.' Were you present when that statement was made?

A I believe I was. I have heard the statement made quite often, and quite rightly so possibly that the FAR-23 type aircraft gives Airworthiness a bit of a shield in that there are no back-up features on the aircraft, and I think that the FAR-23 was probably a reasonable, this is my opinion. I think it was a reasonable standard possibly when the aircraft were built to that specification were carrying commercially three or four passengers, but now that it is getting into 20 or has reached 20, that I think the FAR-23 better be looked at."

I suspect that Mr. Owen, Chief of Airworthiness, overlooked the fact of the extent that aircraft under 12,500 pounds are used in commercial air services. Otherwise, it is difficult to appreciate his lack of concern about the Twin Otter accidents since currently de Havilland sells many Twin Otters to the United States which are often used there for commercial air carrier services.

The DHC-6 is currently being manufactured to meet the intermediate standards required for certain categories of carrier services in the United States, and thus higher than the FAR 23 standards which is the only mandatory provision for such aircraft in Canada. However, other aircraft used for commercial services in Canada and under 12,500 pounds are still being manufactured to meet the very minimum standards for small aircraft. In my opinion the determination of the airworthiness standards which an aircraft must meet should be related to its use rather than to its size. Private owners of small aircraft cannot be expected to have to purchase an aircraft which meets the highest standards since the expense for them would be prohibitive, but those persons operating an aircraft for commercial purposes should be expected to meet the standards as they presently exist in the United States which relate to the use of the aircraft. This is another reason for the adoption of the American Federal Aviation Operational Standards in which is included an intermediate standard for certain types of commercial air carrier services.

Corporate aircraft are for the most part under 12,500 pounds. Such aircraft, although not normally used for the carriage of passengers for hire, do carry passengers for corporate purposes. For airworthiness standards such aircraft should, in my opinion, be equated to aircraft which are used for commercial air carrier purposes.

PART IV

DESIGN APPROVAL FOR AIRCRAFT

CANADIAN MANUFACTURERS

I have already noted that the first step taken by a Canadian aircraft manufacturer intent upon producing a new aircraft type is that of obtaining the Department of Transport's Aircraft Type Approval (ATA) for the proposed design. Once obtained, the manufacturer will be able to represent to prospective buyers that the aircraft that he produces meets certain minimum airworthiness requirements and that, furthermore, the aircraft is eligible for a Certificate of Airworthiness (C of A) in this country. Aircraft type approvals are issued under the authority of Air Regulation 214. The following extract from a brief prepared by the Department explains the steps that eventually result in the issuance of the ATA:

"...Following receipt of the application the first aircraft type approval meeting will take place at the manufacturer's facilities, the prime objectives of which are to reach agreement on the basic airworthiness requirements, for the manufacturer to describe his design, for the manufacturer to outline his program schedule, for DOT to advise the manufacturers of any particular interpretations he should take into consideration, for DOT to advise the manufacturer of any additional airworthiness requirements because of the design concept or because of DOT's variances with the basic requirements and finally to decide on a program for detail talks between the respective specialty groups including those covering the development of a maintenance program. At this time, there is usually very little physical evidence as to the details of the design.

The detail discussions between the DOT and the manufacturer are principally aimed at establishing the acceptable means that will be used by the manufacturer in showing compliance with each paragraph and sub-paragraph of the airworthiness requirement based on his understanding at this time; it is also during these discussions that additional interpretations of the requirements by DOT or the manufacturer are presented and agreement reached. Also during these discussions the first decisions are taken by DOT on the extent of delegation to the Design Approval Representatives (DAR's) for signing off the design against the airworthiness requirements; this delegation is usually assigned on a paragraph by paragraph basis and is subject to revision as more becomes known about the design. The division of sign-off authority at this time, is based on the principle of allocating all routine requirements to the DAR's and DOT retains the approval of the results of tests, flight load analysis, flutter and assumptions which govern large mathematical programs.

The development of the approved maintenance program for the aircraft is under the control of a Steering Committee which is chaired by DOT. At this stage only the basic approach to the operation of the Committee is discussed and agreed to.

(ii) Phase II

The next phase of the ATA procedure consists of more detail discussions between DOT and the manufacturer as the physical aircraft materializes, detail analysis are carried out by the manufacturer, DOT airworthiness inspectors are carrying out surveillance of the manufacturing of the aircraft and maintenance discussions continue. When the aircraft is finally ready for its first flight, the DOT airworthiness knowledge of the aircraft is one of the conditions that must be satisfied prior to an Experimental Flight Permit being issued for the aircraft; this airworthiness knowledge includes statements by the DARs to the DOT that they consider the aircraft safe for commencing the flight test program.

(iii) Phase III

The next phase, is where most of the supporting technical data is obtained to show compliance with the requirements; again there is active participation by DOT personnel and DARs throughout all aspects. The DOT will be integrated in the flight test program to the degree practicable by providing one or more pilots and by full or part-time engineering and quality control personnel during the program; the DOT project pilot is considered to be available to the manufacturer as if he were on their staff but he does not participate in opening up the corners of the flight envelope - high risk flights are first flown by manufacturer personnel. It is also throughout this phase that the final structural, icing, noise, performance, handling and functional tests are carried out. In most programs, the manufacturing of production aircraft has commenced and DOT airworthiness inspectors are playing an active role in carrying out surveillance of the manufacturer's procedures.

(iv) Phase IV

The final phase of an ATA program consists mainly of the approval by DOT or DAR of final reports that are developed by the manufacturer to show compliance with the various requirements and the sign-off of the compliance program. The Aircraft Flight Manual is finalized and approved, the maintenance schedule is completed and approved, a master drawing, which defines the type design is approved and an inspection by the DOT team of involved engineers, pilots and inspectors of a representative production aircraft takes place.

This is also the phase where the final set of limitations are formalized for the design - the manufacturer's intended test of limitations may be adjusted by the DOT because of insufficient evidence, incomplete tests or for any reason that the DOT considers warrants special consideration, and the functional and reliability testing takes place. The Aircraft Type Approval is issued and a formal application is then made by the DOT to the foreign airworthiness authorities to accept the aircraft design.

(v) Changes to Approved Design

From the instant of time that an ATA is issued until the manufacturer is no longer interested in marketing the aircraft, he may continue to change the design of the aircraft. These changes are a result of demands in the market place, service experience, product improvement, customer options and on occasion as a result of the requests of DOT.

Each change is handled, in principle, by the DOT or DAR the same way as for the initial design approval; each is considered against the airworthiness requirements, the program required to show compliance is decided, tests if necessary are carried out, Aircraft Flight Manuals and/or maintenance schedules are revised, the drawing list is revised and if necessary a revision to the ATA is issued. The decision as to whether or not the change is DAR or DOT approved again depends on the nature of the change, the experience and knowledge and time available that the particular DOT expertise has available; the largest percentage of these changes are approved by the DAR since they are relatively straight forward engineering changes, but all maintenance schedule changes, or aircraft flight manual changes are approved by DOT."

CASE STUDY

The DHC-6, de Havilland Aircraft of Canada - Certification

The Commission examined into the certification of the de Havilland DHC-6 (Twin Otter). The evidence revealed two deficiencies in the certification process.

The Twin Otter was certified to the 1956 United States CAR 3 standard, (the forerunner of FAR 23). This standard for small aircraft (under 12,500 pounds) governed the least sophisticated machines such as single engine recreational aircraft. CAR 3 did not demand the rigorous fail-safe protection of a large transport aircraft. Thus, failure of certain single components could result in a crash.

In 1969, the United States tightened its airworthiness regulations for aircraft operated in a commuter and air taxi role. However these higher standards were not made mandatory for Canadian registered aircraft.

1. BETA BACKUP SYSTEM

The Twin Otter has a propeller system capable of reversing. Reverse is intended to be used on the ground in order to shorten the stopping distance. The propeller is in reverse

when the pitch of the blades is in the range of 0 to -14 degrees. At 0 degrees, the propeller develops no forward thrust. The forward range includes those pitches greater than 11 degrees. The interval between forward and reverse, 0 to 11 degrees, is called the Beta range. On the ground after landing, because of the nature of a turbine engine, the propeller normally develops forward thrust at 11 degrees. Hence the Beta range is provided to reduce forward thrust for stopping. The aircraft was certified on the basis that a secondary electrically operated system operating on the main mechanical hydraulic system would prevent the propeller from going through the Beta range into reverse after a malfunction. This Beta backup system causes the propellers to cycle at a pitch of 9 degrees, rather than allowing them to go into reverse position.

The standard which caused de Havilland to include the Beta backup system is:

"CAR 3.418(a). Reversing systems intended for ground operation only shall be such that no single failure or malfunctioning of the system under all anticipated conditions of airplane operation will result in unwanted reverse thrust. Failure of structural elements need not be considered if occurrence of such failure is expected to be extremely remote."

De Havilland had problems with the propeller system, one of which they described as an operational rather than a design problem. If the pilot failed to reset before landing, one or both propellers could come out of reverse on the ground with the result that the aircraft would veer off the runway.

On December 2, 1976, a Greenland Air Twin Otter suffered a propeller failure several hundred feet above ground on approach. Although one propeller reversed, the pilot was able to control the aircraft and land safely. The following internal memo of February 1977 was written by de Havilland's Manager of Flight Operations:

"When the Greenland Air Twin Otter experienced a propeller control failure it was reported by the pilot that the propeller went in a reverse blade angle position at 500' and during approach that he was able to control the aircraft and carry out a safe landing. The defective propeller was shipped into De Havilland for inspection and it was quite evident with the beta back up and follow-up system completely disabled, the propeller must have gone to full reverse. This was hard to credit as it was felt that the aircraft would be completely uncontrollable and that the drag would cause a rate of descent from which a safe landing could not be made.

The whole beta system and its protective devices now became questionable so I decided to investigate the failure cases of the Beta system to see if I could establish whether the Greenland Air propeller had gone to full reverse and if so how much control did the pilot have."
(Emphasis added.)

As a result of the test flights, the Manager of Flight Operations concluded:

"From the numbers noted it is quite evident that:

1. Should the beta back up fail and the propeller go into full reverse. With the power lever reduced to idle the aircraft can be controlled and maintain altitude depending on OAT and weight.
2. The propeller must not be feathered from full reverse.
3. The engine must not be shut down but left at idle."

He therefore recommended that these changes be added to the flight manual.

On May 9, 1978 de Havilland applied to the Department to delete the Beta backup system. In a letter from de Havilland to the Chief, Airworthiness, de Havilland stated:

"Flight tests performed here at DH, the results of which have been forwarded to you relevant to a previous change in the beta back-up failure emergency procedure, have shown that the aircraft handling characteristics are much improved if the blades are permitted to go to the reverse pitch stop with power maintained at Flight Idle, as opposed to the handling that results from the blades being held at the blade angle maintained by the beta back-up system following a major fault in the beta control system. . . ."
(Emphasis added.)

Neither de Havilland nor the Department explained satisfactorily why this flight test of a vital system had not been done during the certification. When questioned by Commission Counsel why no similar flight tests had been made prior to certification, the following exchange occurred:

"Q . . . If you are going to introduce the fail-safe measure, why wouldn't you test it to see: Well, all right, we will put the machine, the aircraft, through this particular procedure and we will use the fail-safe measure when we have the problem, and we will do the same thing without the fail-safe measure?

As it turned out, that is what you did in 1977.

A Yes. I would think that in the early days we all just instinctively shared the concern that if one would go into reverse in the air, it was unthinkable as to hoping that it would still be controllable -- one in forward and one in reverse.

Q It sounds pretty awkward to me.

A It does, and so we got this special condition and we accepted it without testing the validity of the requirement. I guess we were blinded by the headlights."

Notwithstanding the request of the manufacturer for the removal of the Beta backup system as a result of the flight tests which appeared to demonstrate that the aircraft could be more safely operated without it, Transport Canada refused to permit the proposed change to be made by the manufacturer. The Federal Aviation Administration in the United States approved a similar request by Beech Aircraft of the United States to delete a comparable backup system in their aircraft.

When asked why the Department of Transport insisted that the Beta backup system be retained, Mr. Klein responded:

"Q What is the reason for keeping it?

A Well, I think they are just not sure, and they don't understand what we have been discussing this afternoon. . . ."

In summary:

1. The DHC-6 propeller was certified with the Beta back-up system.
2. A number of accidents disclosed problems with respect to the propeller system.
3. A potential accident (Greenland Air incident) demonstrated that the aircraft was controllable despite failure of the Beta backup system.
4. All of these disclosures resulted through chance events and not from the certification process.

5. Further testing by the manufacturer now discloses that the aircraft is in fact safer without the Beta backup system.
6. The airworthiness authorities have not seen fit to adequately respond to these new facts, and the Beta backup system is still being incorporated into Twin Otters.

2. STRESS CORROSION CRACKING

Notwithstanding that in the certification process tests were carried out which satisfied the manufacturer and the Airworthiness Branch that stress corrosion cracking would not occur in the magnaformed rod ends used by de Havilland in the structure of the Twin Otter, stress corrosion cracking has been a problem for many years.

Mr. John Thompson, Director of Product Engineering, admitted to such when he testified as follows:

"Q Well, Mr. Thompson, do you have a stress corrosion cracking problem with respect to the Twin Otter?

A Yes, in a number of areas over the years, there have been a number of stress corrosion problems with respect to the Twin Otter."

Mr. Thompson admitted that since cracking did indeed occur, the tests used for certification purposes must have been inadequate.

The issue of stress corrosion cracking was vital in the Twin Otter aircraft in the fatal accidents which occurred at Coal Harbour, British Columbia, on September 3, 1978, and at Sechelt, British Columbia, on September 30, 1979 referred to at pages 127 and ff. in Volume 1. In its investigation of the Coal Harbour fatal accident, the Aviation Safety Engineers advised the Airworthiness Division in July, 1979 that the magnaformed control rods were susceptible to stress corrosion cracking, i.e., elevator rods and aileron rods, and that the stress corrosion problem was generic to all magnaformed control rods which form part of the structure of the Twin Otter.

No action was taken by the Airworthiness Division at that time to meet the safety hazard, and, as I noted in Volume 1, the reason for the failure to take action was unsatisfactory. If action had been taken, the fatal accident at Sechelt might have been avoided. As I reported at p. 138 of Volume 1, the coroner's jury in inquiring into the fatal accident at Sechelt came to the following conclusion:

"The cause of the accident, a stress corrosion crack, was similar in nature to that which caused the crash of CFAIV at Coal Harbour in September of 1978. The component that failed on CFAIV, the flap control rod, was generically the same as the component on CFWAF, the aileron control rod. In July of 1979 officials of the Aviation Safety Bureau became aware of the existence of a similar problem in elevator control rods of the Twin Otter. This information was passed onto the Department of Licensing and Airworthiness with DOT who in turn discussed the matter with de Havilland Canada. It was mutually agreed that the defects in the elevator rods and the potential defects in the aileron rods did not constitute a 'safety hazard' and so no action was taken.

In our opinion the Department of Licensing and Airworthiness within DOT and de Havilland Canada did not act in the best interests of Public Safety."
(Emphasis added.)

And I then concluded as follows:

"If the warnings as to the generic defect of all magnaformed rods had come to the Airworthiness Division from an independent tribunal, with the procedures in place which I propose to recommend, greater heed would have had to have been given to them, and the fatal accident at Sechelt might have been avoided."

In November, 1970 de Havilland issued a Technical Advisory Bulletin 626. That bulletin provided in part as follows:

"3.5 Two components in the Aileron control circuit located at the final connection to the aileron surface have proven to be vulnerable to corrosive attack. . . .

- b) Push Rods . . . These should be examined particularly at the magnaformed ends for breaks or blisters in the paint indicating corrosion beneath the surface; or for signs of corrosion at any area of anodic treatment breakdown. Any attack in this area which is highly stressed could cause stress corrosion with the additional danger of cracking and loosening of the magnaformed ends.

Mr. T. W. Heaslip, Chief, Aviation Safety Engineering, testified that de Havilland at no time indicated to him that they had known as early as 1970 that the aileron rods had a stress corrosion problem in the magnaformed ends, and that the Technical Advisory Bulletin 626, which outlines this problem, was not brought to his attention until some time in 1979."

COMMENT

This case study, in my opinion, not only reinforces the necessity of the Aviation Safety Engineers being part of an independent tribunal, but also highlights the absence of continuous monitoring of airworthiness by the Airworthiness Division following certification, and the necessity of having a continuing Airworthiness Division within the Airworthiness Branch.

In the case study conducted by the Commission in respect to the certification process of the DHC-6, the evidence disclosed that there was a serious deficiency in the manner in which Airworthiness documented its certification of the aircraft. With respect to two vital aspects in the process Airworthiness was unable to produce any documentary evidence of its monitoring of tests carried out by de Havilland.

Firstly, there was no written evidence from either de Havilland or Airworthiness with respect to the flight tests that were carried out of the DHC-6 as to its controllability when the propellers are in the Beta backup range. The Commission sought to determine whether flight tests such as had been carried out by de Havilland following the Greenland Air incident had been performed during the certification. The Commission was unable to obtain any evidence on this point. Secondly, with respect to the flap control rod problem, Airworthiness was unable to supply the Commission with any documentation to establish that it had monitored the tests conducted by de Havilland to insure that the magnaformed ends of the push-pull flap control rods were resistant to stress corrosion cracking.

If the Air Administration is to effectively carry out a continuing airworthiness function, it is important that a record be kept with respect to the tests performed to verify the airworthiness of the aircraft. In the event of a subsequent failure it is difficult, if not impossible, if such records are not kept for Airworthiness to determine in what respects the testing or monitoring was inadequate.

PART V

THE VALIDATION OF FOREIGN AERONAUTICAL PRODUCTS

The procedure for the obtainment of Canadian type approval for imported aircraft is set out in the Engineering and Inspection Manual of which the following extracts are pertinent:

"2.10 CANADIAN TYPE APPROVALS FOR IMPORTED AIRCRAFT

2.10.1 An aircraft of foreign manufacture, except as indicated herein, which is imported into Canada, will be eligible for a Canadian Certificate of Airworthiness only if the type has received a Type Approval from the Department of Transport. Aircraft manufactured in the United States and for which an Aircraft Type Certificate in the normal, utility, or acrobatic category has been issued by the U.S. Federal Aviation Administration will not normally require the issue of a Type Approval as a pre-requisite to the issue of a Certificate of Airworthiness. U.S. manufactured aircraft type certificated by the FAA in the transport or restricted categories will require a type validation inspection prior to Canadian airworthiness certification in accordance with Section 2.10.6 below.

Canadian Type Approval of Foreign Manufactured Aircraft

2.10.2 A Canadian Aircraft Type Approval may be issued in respect of an aircraft type of foreign manufacture provided that:

- (a) its existing airworthiness status is acceptable, (2.10.3 below);
- (b) adequate and acceptable documentary evidence is submitted, (2.10.4 below);
- (c) it complies with Canadian Special Conditions, (2.10.5 below); and,
- (d) a type validation inspection of the aircraft shows no reason for withholding the type approval, (2.10.6 below).

Existing Airworthiness Status

2.10.3 The aircraft shall have been issued with an aircraft type approval, or equivalent, by the airworthiness authority of the State of manufacture.

Document Requirements

2.10.4 Application shall be made in writing requesting the issue of the Canadian Aircraft Type Approval. The application shall be supported and accompanied by:

- (a) general description and specification of the aircraft;
- (b) a statement identifying the airworthiness standards to which the aircraft, its engine(s), and its propeller(s) were designed, including all Special Conditions required by the State of manufacture;
- (c) a statement from the airworthiness authority of the State of manufacture detailing the deviations or differences permitted between its national airworthiness standards and those of the aircraft, engine(s), and propeller(s) as approved;
- (d) the type approval, or equivalent, for the aircraft, engine(s), and propeller(s), issued by the airworthiness authority of the State of manufacture;
- (e) a listing and a complete set of all mandatory airworthiness directives or their equivalent;
- (f) the approved aircraft flight manual, or its equivalent, and amendments;
- (g) the maintenance manual, or its equivalent, and amendments together with details of the manufacturer's recommended scheduled maintenance program.

The letter of application shall be in either English or French, and a copy of all documents specified above shall be supplied in the first instance in the English language.

Canadian Special Conditions

2.10.5 The aircraft type shall comply with Canadian Special Conditions, representing the difference in airworthiness standards between the airworthiness standards to which the aircraft was approved by the airworthiness authority of the State of manufacture, and the standards of airworthiness approved or established by the Minister of Transport for the issue of a Canadian Aircraft Type Approval in accordance with Section 214 of the Air Regulations:

- (a) The Canadian Special Conditions applicable to the aircraft type will be established after study of the documents specified in Paragraph 2.10.4 has been made and will normally have the following objectives:
 - (i) to account for the differences between the airworthiness standards to which the aircraft was designed and those of the State which granted it its foreign type approval (i.e., to take account of deviations or exceptions granted by the foreign airworthiness authority);

- (ii) to account for the differences between the airworthiness standards of the State of manufacture and the Canadian airworthiness standards established or approved by the Minister of Transport;
 - (iii) to account for any unusual or unconventional features of the aircraft type or in its application to the role for which Canadian type approval is sought;
- (b) compliance with the Canadian Special Conditions shall be proven by one of the following:
 - (i) by demonstration by the applicant to the satisfaction of the Chief, Airworthiness, Department of Transport that the aircraft complies with each Special Condition; or,
 - (ii) in the case of those States whose certification is acceptable to the Department of Transport, on written certification by the airworthiness authority of the State of manufacture that the applicant has demonstrated compliance with each Canadian Special Condition to that authority.

Type Validation Inspection

2.10.6 The type validation inspection shall normally consist of a technical assessment, involving a review of the approved type design data, including the recommended maintenance program and a flight assessment of the aircraft. Prior to the commencement of these assessments the applicant shall be required to undertake:

- (a) to provide, or to cause to be provided, all technical data and familiarization courses to Department of Transport officials conducting the validation inspection training or crew check-out of test pilots as deemed necessary by the Department of Transport and,
- (b) to pay all expenses incurred by the Department of Transport in conducting the validation inspection.

2.10.7 For the technical assessment, an aircraft of the type for which approval is sought shall be provided at a place designated by the Department of Transport; this place will normally be at the manufacturer's facility. The objective of this assessment will be to verify that the aircraft:

- (a) complies with all relevant special airworthiness requirements shown in Air Navigation Orders, this Engineering and Inspection Manual, and such other requirements as may be specified at the time of application;

- (b) exhibits no unusual or hazardous characteristics in its design or construction;
- (c) has adequate provision for the performance of necessary servicing and maintenance; and,

Following flight assessment of the aircraft, additional Special Conditions may be formulated if deemed necessary by the Minister.

Changes to the Approved Type Design

2.10.9 Changes which affect the aircraft type approval, the aircraft type certificate data sheet or equivalent or the approved aircraft flight manual must have prior approval from the Department of Transport.

Continuing Airworthiness Information

2.10.10 Assurance will be required from the manufacturer or from the airworthiness authority of the State of manufacture that future issues or amendments of all mandatory airworthiness directives or their equivalent will be supplied automatically to the Department of Transport.

Manual Requirements

2.10.11 As a condition of type approval or recognition of a type certificate, the applicant is required to provide at no cost to the Department of Transport seven copies each of the Aircraft Flight, Maintenance, Structural Repair, and Illustrated Parts Manuals, Service Bulletins and subsequent amendments thereto. However, in the case of transport category aircraft and upon request by the applicant, the required number of copies of the Manuals and Service Bulletins may be reduced."

The Validation of Aircraft Manufactured in the United States of America

On July 28, 1938 an exchange of notes recording an agreement was made between Canada and the United States of America relating to certificates of airworthiness for export. The more pertinent sections of that agreement are hereinafter reproduced:

"Article I

- (a) The present arrangement applies to civil aircraft constructed in continental United States of America, including Alaska, and exported to Canada; and to civil aircraft constructed in Canada and exported to continental United States of America, including Alaska.
- (b) This arrangement shall extend to civil aircraft of all categories, including those used for public transport and those used for private purposes as well as to components of such aircraft.

Article II

The same validity shall be conferred by the competent United States authorities on certificates of airworthiness for export issued by the competent Canadian authorities for aircraft subsequently to be registered in the United States as if they had been issued under the regulations in force on the subject in the United States, provided that such aircraft have been constructed in Canada in accordance with the airworthiness requirements of Canada.

Article III

The same validity shall be conferred by the competent Canadian authorities on certificates of airworthiness for export issued by the competent United States authorities for aircraft subsequently to be registered in Canada as if they had been issued under the regulations in force on the subject in Canada, provided that such aircraft have been constructed in continental United States or Alaska in accordance with the airworthiness requirements of the United States.

Article IV

(a) The competent United States authorities shall arrange for the effective communication to the competent Canadian authorities of particulars of compulsory modifications prescribed in the United States, for the purpose of enabling the Canadian authorities to require these modifications to be made to aircraft of the types affected, whose certificates have been validated by them.

(b) The competent United States authorities shall, where necessary, afford the competent Canadian authorities facilities for dealing with non-compulsory modifications which are such as to affect the validity of certificates of airworthiness validated under the terms of this arrangement, or any of the other original conditions of validation. They will similarly give facilities for dealing with cases of major repairs carried out otherwise than by the fitting of spare parts supplied by the original constructors.

Article V

(a) The competent Canadian authorities shall arrange for the effective communication to the competent United States authorities of particulars of compulsory modifications prescribed in Canada, for the purpose of enabling the United States authorities to require these modifications to be made to aircraft of the types affected, whose certificates have been validated by them.

(b) The competent Canadian authorities shall, where necessary, afford the competent United States authorities facilities for dealing with non-compulsory modifications which are such as to affect the validity of certificates of airworthiness validated under the terms of this arrangement, or any of the other original conditions of validation. They will similarly give facilities for dealing with cases of major repairs carried out otherwise than by the fitting of spare parts supplied by the original constructors.

Article VI

(a) The competent authorities of each country shall have the right to make the validation of certificates of airworthiness for export dependent upon the fulfillment of any special conditions which are for the time being required by them for the issue of certificates of airworthiness in their own country. Information with regard to these special conditions in respect to either country will from time to time be communicated to the competent authorities of the other country.

(b) The competent authorities of each country shall keep the competent authorities of the other country fully and currently informed of all regulations in force in regard to the airworthiness of civil aircraft and any changes therein that may from time to time be effected."

On August 12, 1970 and February 18, 1971 an exchange of notes between Canada and the United States of America broadened the coverage of the arrangement by extending the application of the agreement to aircraft engines and propellers, to aircraft appliances, materials and parts, as well as to spare parts for aircraft, aircraft engines, propellers and appliances which have been exported in accordance with the arrangement.

The purport of the agreement, as amended, was that the Canadian authorities would accept the certificate of airworthiness for export of the competent authority in the United States with respect to aircraft and component parts manufactured in the United States for export to Canada, and the United States would accept the certificate of airworthiness for export of the Canadian authority with respect to aircraft and component parts manufactured in Canada for export to the United States. Prior to 1970, both countries respected this agreement, and Canada did not conduct Canadian type validations for imported aircraft constructed in the United States. For example, when Douglas Aircraft in 1966 sold a DC-9-14 aircraft to Air Canada, they merely wrote to the Canadian authorities and included an export certificate of airworthiness issued by the United States Federal Aviation Agency. This was the entire procedure relating to Canada's "type approval" of the DC-9 aircraft.

Air Canada DC-8, Malton, Ontario, July 5, 1970

On July 5, 1970 an accident involving an Air Canada DC-8 took place at Toronto International Airport, Malton, Ontario, and the Honourable Mr. Justice H. F. Gibson was

subsequently named to head a Board of Inquiry inquiring into the causes of the said accident. In the flight in question, shortly before landing, the spoilers on the DC-8 aircraft were deployed when the aircraft was about 60 feet above the runway. The Board of Inquiry's Report included the following:

"As already stated also, the Ministry of Transport does not approve all the aircraft operator's manuals but relies on the FAA approved Airplane Flight Manual, which in effect becomes part of the Ministry of Transport's Airworthiness Certificate. The Ministry of Transport, therefore, in fact relies on the accuracy and explicitness of the FAA approved Airplane Flight Manual. The aircraft operating manual of another Canadian DC8 operator, was much more explicit concerning the inherent hazard, of ground spoiler operation in flight. It would seem reasonable, therefore, that the Ministry of Transport should have cross-checked with the manual of the other DC8 operator in Canada. If it had done so, it might have been possible for it to have alerted Air Canada as to the hazards of operating this ground spoiler system in this series DC8 aircraft, and it might have been possible for it to have ordered that appropriate remedial action be taken by Air Canada in relation to the latter's manuals."

Among other findings, Mr. Justice Gibson stated:

"There was no evidence that the Ministry of Transport Inspectors knew that the ground spoilers on the DC8 series aircraft could be deployed while any such aircraft were in flight with their undercarriage down. Notwithstanding this and in any event, such Inspectors did not check and as a result failed to ascertain that there were important differences in the instructions in respect to the operation of the ground spoilers systems of DC8 series aircraft contained in the Air Canada 55 - DC8 Operating Manual and the aircraft operating manuals of other Canadian licensed operators.

...

The failure of the Ministry of Transport to detect the deficiencies and misinformation in the manufacturer's aircraft flight manual as to the operation of the ground spoiler systems on this type of aircraft; and the failure to require the manufacturer in such manual to warn of the danger of inappropriate deployment of the ground spoilers on this type of aircraft when in flight and especially when it is close to the ground."

The Board of Inquiry listed eight recommendations. Among them was the following:

"Consideration should be given by the Ministry of Transport to strengthen its capacity to approve the design of aircraft of the transport category imported

for use into Canada. Alternatively, in accepting under a protocol the importation of an aircraft designed and manufactured in a foreign country, the Ministry of Transport cannot logically accept any responsibility for the design approval."
(Emphasis added.)

The Validation Program

Subsequent to the publication of this report, the Department of Transport took the following position:

"After 1970, as a result of the Inquiry into the DC-8 accident at Toronto airport, the DOT undertook a more formal validation program on all aircraft imports, but also extended its program to engines and to transport category aircraft imported from the USA. The DOT considered that the validation program, as applied to U.S.A. aircraft was covered under the reciprocal agreement by the clause that affords either party the opportunity of applying special conditions on any new type of aircraft entering one another's country. One of Canada's special conditions was a validation program on all transport category aircraft. . . ."
(Emphasis added.)

In explaining the introduction of a validation program for aircraft manufactured in the United States for sale in Canada, the Administrator stated:

"We had, prior to that, been conducting such programs on non United States manufactured airplanes. And we had recommended, prior to that time, that we do so on United States airplanes.

But as our superiors of the day did not agree that we should, and so, when Justice Gibson made his recommendation, we were geared to do this, because we had decided that it was necessary.

And the basis for our decision is an interesting one:

The United States does not have all its airworthiness requirements in the FAR Airworthiness codes.

It's, in fact, has some of its airworthiness requirements in the operational FARs, 121, 135, to be specific.

. . . Well, it really does, because the airplane is certificated against the airworthiness standard.

But the airplane is operated, and receives its operating certificate against the operating FARs and where the operator is required to take certain additional procedures to compensate for the fact that there is something missing out of the airworthiness FARs.

So, the United States, therefore, in certain areas, has made use of the operational FARs; and the two together: the airworthiness FARs and the operational FARs represent the United States system. And it is a perfectly good system, and we don't criticize the United States system.

But it so happens that we don't have the equivalent of the United States operational FAR in Canada.

Therefore, we require the airplane, to, in fact, be certified airworthy, so that when it comes into our operations, it is entirely complete; everything in the flight manual states to the pilot precisely how he must operate the airplane in order for that airplane to be operated safely under all conditions.

Because of this difference between our two systems, we decided it was necessary - and I am very pleased that Justice Gibson made his recommendation, because it supported our view at that time; and thereafter, we commenced doing validation programs on United States airplanes that were certificated to FAR 25 - only those certificated to FAR 25.

... Now, in that certification, in that validation program, our intention was and is to ascertain whether or not an American certificated airplane has any handling characteristics in normal or emergency modes of operation which require special procedures, and perhaps special training; or which may require even a modification if we find the results to be in the nature of a deficiency.

And we therefore designed our validation program to do that, and how do we conduct it.

The manner in which we conduct it is to have specialist engineers visit the manufacturer's plant and for a few weeks, familiarize themselves with every system on the airplane that the pilot can control, to determine in its normal mode and its emergency mode, how does it operate.

And our test pilot is there simultaneously, learning on the simulator and through other simulation labs how the airplane operates.

And finally, he conducts a very short flight test of a few hours, five or six hours, on the airplane.

And he flies the airplane in all configurations around the envelope, the flight envelope, to determine whether or not, in his judgment, the airplane, in the normal and emergency modes, can be handled by a pilot with normal skills.

And that is the basis of our validation program."

Although the Administrator placed the need for a validation of United States manufactured aircraft on the basis that in Canada we do not have the equivalent of the United States Operational FARs, it appears from subsequent testimony that in the validation of United States manufactured aircraft for sale into Canada, the engineers and the test pilots determine whether the aircraft meets the Airworthiness FARs and not the Operational FARs. That is what I take from the following exchange between the Administrator and counsel for ATAC:

"Q . . . let's deal with the function of the test pilot.

Would the actions that he undertakes as a part of this program basically relate to matters that are covered by FAR 25 and FAR 121?

A FAR 25.

Q And in regard to the engineers, can you just give me any kind of a rough idea as to the application of their time as between the requirements set out in FAR 25 and FAR 121?

A They would be working absolutely to FAR 25. . . ."

THE VALIDATION OF THE DC-10

On August 10, 1977 McDonnell Douglas in accordance with section 2.10.4 of the Revised Requirements of Canadian Type Approvals for Imported Aircraft made formal application with the Ministry of Transport for Canadian aircraft type approval for their DC-10 aircraft. The application was made with specific reference to the sale of the model DC-10-30 to Wardair. The aircraft had been previously certified as airworthy by the Federal Aviation Administration and had been in service with other carriers for some years, but until such time as a Canadian carrier sought to purchase a DC-10, there was no need for Canadian authorities to consider the matter.

McDonnell Douglas was informed, subsequent to their request, and pursuant to the new policy with respect to validation of American manufactured transport category aircraft, that prior to the issuance of any type approval by the Canadian authorities, the DOT intended to conduct a validation and flight evaluation program, which program included among other things, test flights.

The McDonnell Douglas DC-10 is a wide-bodied jet aircraft of the transport category. Along with the Lockheed L-1011, the Boeing 747 and the Airbus, the DC-10 is one of those aircraft commonly called a "jumbo jet".

An essential part of the certification of an aircraft as airworthy relates to the question of stalls. Simply stated, a wing "stalls" when the angle of attack of the wing increases and as a consequence the airflow over the top of the wing becomes turbulent and the aircraft loses lift. The airspeed at which this occurs is called the stall speed. In the case of transport type aircraft, a stall can be a most dangerous occurrence. Consequently sufficient stall warning is an essential part of the airworthiness of the aircraft. In other words, certain design features of the aircraft must be such that a pilot is warned in sufficient time of an impending stall.

As the stall is approached, the airflow begins to separate and the turbulent air then hits the horizontal stabilizer. At this point the stabilizer begins to shake and this shaking is transmitted up the fuselage and is literally felt in the cockpit. This phenomenon is commonly referred to as "pre-stall buffet" and the pre-stall buffet is a useful indicator to the pilot that the aircraft is approaching a stall (on aircraft with a T-tail horizontal stabilizer design, such as the DC-9, the horizontal stabilizer is above the airflow. This prevents the pre-stall buffet being a sufficient warning, and in such aircraft other devices, such as a stall warning horn, are necessary). As an additional stall warning device, the DC-10 had a stick shaker, a device composed of a mallet on the bottom of a pendulum that physically shakes the control column and transfers the shaking into the controls with the result that the pilot can feel and hear the shaking and thus be sufficiently warned of the impending stall.

During the DOT validation of the DC-10 aircraft, a stall characteristics test was carried out. Basically, the stall characteristics test is conducted to determine if the aircraft demonstrates a sufficient buffet or other stall warning before the actual onset of stall.

For the purpose of the Canadian validation program, the aircraft used for the flight test was an Air New Zealand DC-10-30. This was a production aircraft destined to be received by Air New Zealand. Because the American certification of the DC-10 had been completed for several years, there were no test aircraft available for the Canadian

validation program. Consequently, McDonnell Douglas had no choice but to use a production aircraft. Unlike a test aircraft, a production aircraft does not have position indicators on the glare shield, nor does it have calibrated instruments throughout the test panel, a G meter in prime field of view, an instrument test counter, and a force wheel which includes the event marker. This latter device is an instrument permitting a pilot to record the exact timing of certain events during the test flight.

It was generally agreed to by all parties concerned that at some time during the high altitude stall characteristics test, damage was sustained by the aircraft elevator. It was also generally agreed that the damage was caused by the fact that the aircraft had proceeded too far into the stall,

Upon learning of the damage caused to the aircraft, Transport Canada took the view the McDonnell Douglas DC-10 was not structurally airworthy. After several months of discussion, a second flight test was conducted at which test the DOT test pilot was instructed to cease lowering the speed of the aircraft at high altitude at the point at which he would agree that the buffeting was such to deter further reduction of speed. This was accomplished to the satisfaction of the Department and the former declaration of airworthiness dissatisfaction was resolved by adding a chart to the aircraft flight manual which indicated speeds below which the pilot was instructed not to enter.

Of prime importance however is the fact that no structural changes were brought to the aircraft between the two flight tests. After the first test flight, Transport Canada refused to approve the certificate of airworthiness for export, but after the second test flight, a certificate of airworthiness was issued.

The question arose why the test pilot on the first flight lowered the airspeed below the speed at which sufficient stall warning buffeting occurred, as witnessed during the second test flight. The test pilot on the first flight testified that he had been given this lower speed by McDonnell Douglas and he was simply carrying out an agreed test program. This was denied by the manufacturer whose position was supported by the flight cards completed at the pre-flight briefing.

It is unnecessary for the purposes of the Commission to determine whether or not a lower speed was agreed to verbally at the meeting prior to the first test flight. However, it is apparent that despite the fact that the aircraft was not approved after the first test flight and although no structural changes were brought to the aircraft, Transport Canada subsequently declared the aircraft to be airworthy and issued certificates of airworthiness for McDonnell Douglas DC-10 aircraft. It is true that a "stall deterrent chart" was added to the operating manual and became a Canadian special condition, but the exact utility of that chart remains a question of some doubt.

COMMENT

It appears to me that validation by Transport Canada of United States manufactured transport category aircraft which are to be imported into Canada violates the Bilateral Agreement entered into between the Government of Canada and the Government of the United States. As has been noted above, the thrust of the Bilateral Agreement was the mutual recognition by Canada and the United States of the responsible airworthiness agencies in each of these countries. Thus, Canada was expected to accept the certificate of airworthiness for export of the competent American authority and the United States would accept the certificate of airworthiness for export of the competent Canadian authority.

Although the Bilateral Agreement contemplated that either country could "make the validation of certificates of airworthiness for export dependent upon the fulfillment of any special conditions which are for the time being required by them for the issue of certificates of airworthiness in their own country", I do not see how it can be said that the validation procedures for such aircraft are special conditions. The special conditions contemplated by the Bilateral Agreement, I think, were airworthiness standards added to the standards of the validating authority and which had been found necessary by reason of the experience in the respective countries. As the Bilateral Agreement stated "information with regard to these special conditions in respect to either country will from time to time be communicated to the competent authorities of the other country".

I do not think that it was contemplated that "as a special condition" we would endeavour to satisfy ourselves that the Federal Aviation Authority in the United States had

properly determined that an aircraft being manufactured in the United States complied with its own requirements, and yet that is what the validation program appears to be directed to. To classify Canadian validation of United States certification as a special condition defeats the very purpose of the Bilateral Agreement.

As I have noted, prior to 1970 the Bilateral Agreement was given its full force and effect. The rationale of the change to a validation of American manufactured transport category aircraft was twofold. It was said that in proceeding upon a validation program, the Air Administration was pursuing a recommendation of Mr. Justice Gibson following his inquiry into the DC-8 accident at Malton, Ontario, on July 5, 1970. As noted above, Mr. Justice Gibson did make the following recommendation:

"Consideration should be given by the Ministry of Transport to strengthen its capacity to approve the design of aircraft of the transport category imported for use into Canada. Alternatively, in accepting under a protocol the importation of an aircraft designed and manufactured in a foreign country, the Ministry of Transport cannot logically accept any responsibility for the design approval."
(Emphasis added.)

However, I do not read his recommendation in the same light. He gave recognition to giving effect to the Bilateral Agreement. As an alternative, he suggested that "the Ministry of Transport strengthen its capacity to approve the design of aircraft of the transport category imported for use into Canada". If in putting forth this alternative, Mr. Justice Gibson had in mind a complete independent validation program, the present procedure would not give full effect to that recommendation.

The evidence disclosed that with respect to the manufacture of new aircraft, the certification program in the United States undertaken by the Federal Aviation Authority, in cooperation with the manufacturer, often takes years before it is finalized. If Canada were to embark upon a true validation program of American manufactured aircraft, a similar process would be required from the inception of the design program even without any assurance that the aircraft would ever be sold in Canada. A short inquiry by the Canadian airworthiness authority after the aircraft has been certified as airworthy by the Federal Aviation Authority contributes very little to a proper assessment of the airworthiness of the aircraft. I rather suspect that Mr. Justice Gibson had in mind a greater familiarization by the Canadian authority of newly designed American aircraft.

If he contemplated that the Canadian airworthiness agency would undertake the type of validation program that the Federal Aviation Authority engages in, it would, in my opinion, require too great an investment of our resources resulting in little, if any, gain.

Without any reflection upon the competency of our airworthiness group it is apparent that a short visit to the American manufacturer and a test flight could not really determine whether the Federal Aviation Authority had properly performed its function.

It is also no reflection on the competency of our airworthiness people to acknowledge that in matters of high technology we must recognize the expertise of the aeronautical engineers employed by the major aircraft manufacturing companies which carry on business in the United States as well as the high expertise available to the Federal Aviation Authority by reason of its great resources.

Thus, measured against our resources, it is doubtful that the validation of United States manufactured aircraft by our authorities contributes very much to aviation safety. In my opinion the resources of the Canadian airworthiness agency would be better used in other ways.

The other rationale for the implementation of the current validation program as advanced by the Administrator was by reason of the absence in Canada of the operational FARs which, as I have noted, are also essential to the determination of the airworthiness of the aircraft. However, in the validation program, the validation team appears to direct itself only to the airworthiness FARs. In any event, if both the airworthiness and operational FARs were to be adopted as a basic code for Canada, this reason for the continuation of the current validation program would disappear.

In addition, the evidence disclosed that the validation of the DC-10 by the Canadian authority, which brought about no structural change to the aircraft, resulted in strained relations between the Canadian authority and the manufacturer, and between the Canadian authority and the Federal Aviation Authority, and considerable damage to the aircraft used in the test flight. The American authority has responded by embarking upon an American validation of Canadian manufactured aircraft for export into the United States, all of which has impeded the Canadian manufacturing industry and

delayed the purchasers of American manufactured aircraft in Canada, in the absence of any enhancement of aviation safety.

I think it safe to assume that when the Federal Aviation Authority certifies that the American manufactured aircraft meets its requirements, that the aircraft does so, and little is to be gained by a cursory examination to try to satisfy ourselves that the American manufactured aircraft meet American standards when it has been certified by the competent authority. To accept the American certification for export would not prevent Canada from imposing special conditions that an American manufacturer must meet if the aircraft is to be sold in Canada. As a result of our experience, we have imposed special conditions such as those which relate to the deployment of spoilers in the DC-8. The conditions would be set forth in the airworthiness code which I am recommending should be enacted. They, thus, would be known to all interested parties and in advance.

I propose to recommend that the present validation program be replaced by a less ambitious, but more useful procedure for the familiarization by Transport Canada with newly designed aircraft intended for use in Canada. This would enhance Transport Canada's ability to monitor the continued airworthiness of the aircraft and to determine that it is maintained and operated in the manner contemplated by the manufacturer and the Federal Aviation Authority and meets any special conditions imposed by the Canadian airworthiness agency.

The Canadian airworthiness agency must, of course, continue to assume the duty of determining that the Canadian manufactured aircraft meets the necessary standards. However, it could make better use of its resources if more of its time were devoted to the question of continuing airworthiness of the aircraft, following its type approval and the issue of certificates of airworthiness, which matter will be subsequently discussed in more detail.

PART VI

DELEGATION OF AUTHORITY

In the United States' study on the certification of commercial passenger aircraft to which I have previously referred, the National Research Council outlined the scope of the challenge that any airworthiness authority must face when ensuring that an aircraft meets all the regulatory requirements with the following observation:

"... Boeing estimates it will concentrate about 4,000 engineers on its new 767 transport at the peak of its design effort. As a measure of the volume of work to be performed and reviewed, Lockheed has reckoned that, in the course of certificating a new wide-body aircraft, it would submit approximately 300,000 engineering drawings and changes, 2,000 engineering reports, and 200 vendor reports. In addition, it would subject the airplane to about 80 major ground tests and 1,600 flight test hours. Throughout this period, it would send some 1,500 letters to the FAA.

FAA engineers cannot review each of the thousands of drawings, calculations, reports, and tests; yet the agency must be certain that the design for a new airplane meets all the regulatory requirements. . . ."
(Emphasis added.)

In Canada, as well as in the United States and other countries, the delegation of certain responsibilities relating to the airworthiness function has been in effect for several years. This delegation is founded upon the necessity to reduce the manpower required by the DOT. Unfortunately this delegation of authority is not founded on any regulation. Commenting on the absence of any regulation, Transport Canada stated:

"... Delegation is not a derogation of duty by the DOT but a system of providing the public with better service, keeping the DOT airworthiness personnel within certain growth values while at the same time maintaining an acceptable standard of airworthiness within Canada. Any question with regard to the delegation being legal was intended to be overcome by a revision to the Aeronautics Act but these proposals died on several occasions, on the order papers of parliament. Those who are delegated are expected to carry out the specific delegated functions as if they were DOT personnel and the auditing function of the DOT is intended to ensure that the delegated responsibility is carried out in an acceptable manner.

Within the airworthiness function there are only two types of delegation, one is the engineering purposes and the other is for quality and conformity inspection of aeronautical products."
(Emphasis added.)

DESIGN APPROVAL REPRESENTATIVES (DARs)

The functions and duties of a design approval representative were set forth in a Notice to Aircraft Maintenance Engineers and Aircraft Owners dated October 15, 1968. The stated purpose of the program was to expedite the examination of engineering data required to obtain DOT approval for an aircraft, engine aircraft component, or the repair and alteration of previously certificated aircraft. It was intended that the DAR system be used as much as possible in any matter related to type approval of aircraft, the routine checking of data emanating from the manufacturer as well as the question of approvals of repairs and alterations. It should be noted that any manufacturer, air carrier or repair organization which is not eligible or does not elect to use the DAR system, is required to submit all engineering data to the DOT Regional Superintendent, Aeronautical Engineering, for review and approval. The NAMEO of October 15, 1968 explains the Design Approval Representative system:

"Under this system a qualified self-employed individual may nominate himself, and an engineering consulting organization, manufacturer of aircraft, engines, aircraft components, an air carrier or a repair and overhaul organization may nominate qualified individuals in their employ for appointment as an engineering representative of the DOT. If the nominee meets the requirements for appointment as outlined herein and is so appointed, he will be authorized to represent the DOT in determining the compliance of aircraft, engines, aircraft components, appliances, aircraft and appliance repair and alterations, with the pertinent civil airworthiness requirements, and to certify that these requirements have been met. In connection with these activities, an appointee will be serving as a direct representative of the DOT; he will be guided by the same requirements, instructions, procedures, and interpretations applicable to DOT employees in the performance of similar duties."

(Emphasis added.)

There are seven types of DARs, based on the authority they have to approve certain types of work:

1. Structures DAR
2. Power Plant DAR
3. Systems and Equipment DAR
4. Performance DAR
5. Engines DAR
6. Test Pilot DAR
7. General DAR.

In large aeronautical organizations, the NAMEO foresees the existence of an Airworthiness Control Committee (ACC). In large organizations such as Pratt and Whitney Aircraft of Canada Ltd., Air Canada, de Havilland and CP Air, there is a need to ensure that the responsibilities of all the DARs on a particular job are being considered. This committee ensures internal quality control and in this way, all aspects of any particular problem are dealt with by the total DAR group within the organization.

Although DARs are generally thought of in their capacity as employees of a manufacturer, they are also employed by aircraft operators, and these latter DARs are sometimes referred to as "Operating DARs". In addition to evaluating the initial design and certification of aircraft, operating DARs are involved in the continuing airworthiness of the aircraft.

There were some witnesses who disagreed with the present DAR system. For instance, Mr. John E. O'Brien, Manager of the Engineering & Operations, Engineering & Air Safety Department of the U.S. Air Line Pilots Association, testified in support of the brief presented by the Canadian Air Line Pilots Association (CALPA). Mr. O'Brien, referring to a similar system in use in the United States, stated:

"One of the basic deficiencies in the present system of aircraft certification is the use of Designated Engineering Representatives (DERs) by the FAA. These are persons selected by the agency to perform inspection functions and approve work performed by the aircraft manufacturer. They also pass on the adequacy of thousands of airworthiness and quality control inspections during the design, constructions and test phases that prepare a modern airliner for commercial use. The basic problem with this arrangement is that they are employees of the manufacturer, not the Federal government. They are paid by the company that employs them, not the government agency that is charged with carrying out the public trust. In essence, the regulated are regulating themselves."
(Emphasis added.)

The designated engineering representative system in the United States was included in the study made by the National Research Council. They concluded:

"The advantages of the designee system are apparent. It enables the FAA to have a substantially increased number of highly qualified technical people reviewing and checking thousands of pages of data to determine whether or not all the pertinent regulations and procedures have been satisfied. The possible disadvantage of the system, one that has been often asserted by some members of the public and representatives of interested groups other than the companies and the FAA itself, is the appearance, if not the existence, of a lack of independent objectivity--i.e., a conflict of interest for the designee, who is in the position of serving two masters.

The committee finds, however, that potentials for conflict are checked by: (i) the ethical motivation of engineers to maintain a reputation for technical integrity and professionalism; (ii) the fact that, recognizing the stake of the manufacturer in assuring a safe, serviceable, and reliable product, the company's designees are senior engineers who perform traditional engineering review tasks for the FAA that would, by and large, be performed on behalf of the company; (iii) the organizational structure by which the designees perform their work under the supervision of the FAA staff; and (iv) the arrangement that the FAA reserves to its own staff the most critical design decisions and approvals.

As the system is presently organized, therefore, the committee concludes that the designee system for augmenting the capability of the FAA to review and certificate the type design is not only appropriate but indispensable. The committee, therefore, recommends that the FAA continue to use Designated Engineering Representatives to perform the functions now delegated to them."

(Emphasis added.)

COMMENT

There is obviously the appearance of a conflict of interest when the Design Approval Representative has a duty both to his employer and to Transport Canada. However, no evidence was submitted to the Commission that there was anything more than the appearance of a conflict of interest, and there is no reason to believe that the DARs are failing in their duty to Transport Canada.

As has been noted above, the Designated Engineering Representative system in the United States has received full support for its continuation by the National Research Council for the reasons set forth above. It is to be noted that there is a significant

distinction made in the United States. The Federal Aviation Authority reserves to its own staff the most critical design decisions and approvals. That does not appear to be the practice in Canada. However, from a practical point of view, it would be quite impossible with the current resources made available to the Air Administration to endeavour to hire sufficient highly trained engineers to perform the functions presently performed by the DARs, and, therefore, it is my opinion that Transport Canada should continue to use the Design Approval Representatives to carry out their current airworthiness functions.

As has also been noted, the current delegation of authority to Design Approval Representatives is not founded in any law or regulation. Furthermore, Transport Canada officials pointed out during the hearings of the Commission that the system as outlined in the October 15, 1968 NAMEO needed to be updated. Transport Canada has on file a detailed list of all the changes necessary, but it was stated that a lack of manpower has delayed the drafting of the appropriate guidelines and legislation. This is a matter which should be accomplished by the Aeronautics Task Force.

Although there was no evidence, as I have noted, to support the claim that the DAR's are failing in their duty to Transport Canada, the fact remains that they are in what can sometimes transpire to be a delicate position. Certain steps could be taken which would support their independence while at the same time assuring CATA's capacity to monitor that independence.

Two related measures appear appropriate. Firstly, some form of formal licensing or accreditation of the DAR's should be established. As a result, should a DAR show a lack of independence in a particular case, he would be obliged to account for his actions to the Air Administration, or be subject to action with regard to his license or accreditation. Secondly, no employer should be permitted to dismiss a DAR from their employ without the approval of DOT which approval would be granted provided that it was satisfied that the dismissal was not because of the performance of his obligation as a representative of the Department of Transport. This would protect the DAR from employer reprisal in the case where a DAR was simply fulfilling his obligation to the DOT.

AIRWORTHINESS INSPECTION REPRESENTATIVES (AIRs)

The airworthiness inspection representatives are employees of Canadian manufacturers authorized by Transport Canada to inspect and certify aircraft components prior to such components being exported to foreign countries. These representatives fulfill the role of a DOT airworthiness inspector, but they are only delegated their authority when performing their responsibilities with a manufacturer who is an "approved company". The position of the AIRs is similar to that of the DARs, and my earlier comments with respect to the DARs are equally applicable to them.

APPROVED COMPANIES

The approved organization system is a program adopted by the Department of Transport whereby actual certification privileges are delegated to an organization which then becomes known as an "Approved Company". The DOT defines the system as follows:

"An internationally recognized alternative to the certification of an aircraft or aircraft part by an individual AME is to vest the equivalent certification privileges in an Approved Company (Refer ICAO Annex I, Part 2.4). This is the invariable practice in the case of manufacturers of aeronautical products. Also where repair and overhaul operations reach a certain complexity it is impractical to expect a licensed individual to possess all of the skills, knowledge and facilities required to make a proper certification. In this regard, we require that all aircraft which are pressurized and over 12,500 lb. gross weight must be certified under an Approved Company system. This means that the company must provide all the necessary facilities, tooling, equipment and qualified personnel for the accomplishment and certification of the work and a system whereby adherence to approved standards is monitored. Transport Canada ensures that all these conditions are met prior to granting Company Approval, and subsequently by a system of formal audits and spot checks verifies that the company continues to comply with the appropriate airworthiness standards."

Basically, Transport Canada conducts an in depth, initial audit of any candidate company's quality control system and actual compliance with that system. All designated personnel are checked to ensure that they are properly qualified for the job, and the actual work carried out by the company is inspected.

At an Approved Company which manufactures aeronautical products for export, a number of Airworthiness Inspection Representatives are designated by Transport Canada. I have already reviewed the role carried out by the AIRs.

Not only does the DOT approve manufacturers to certify aircraft, but another group of companies are approved in the field of aircraft maintenance. There are three classes of aircraft maintenance company approvals. A first group are approved to certify the aircraft which they operate, including helicopters, using standard maintenance programs. A second group are the air carriers using a continuous maintenance system. Three companies in Canada use this system, namely, Air Canada, CP Air and Pacific Western Airlines. Under this program the approved companies have certain privileges not available to other companies, where the standards of maintenance are achieved by procedures dependent upon the ability of the company to amend their own maintenance programs based on service experience. Furthermore, these companies have the authority to grant certification privileges to their own personnel, based on the company's highly developed training programs. The final difference is that the aircraft operated by these companies are issued with permanent Certificates of Airworthiness, which eliminates the necessity of compliance with the Condition and Conformity Inspection (CCI) procedure.

Under a continuous maintenance program, the aircraft is subjected to many inspections per year, but notwithstanding the high daily utilization of the aircraft concerned, the regular maintenance checks make it unnecessary to remove these aircraft from service to perform the separate inspection required by the CCI procedure.

The third group of aircraft maintenance approved organizations concern aircraft repair and overhaul enterprises which engage in aircraft maintenance on a contract or on an ad hoc basis.

The final type of approved companies refers to those organizations engaged in the repair and overhaul of aircraft components, a very specialized field necessitating specialized equipment. Not only do licenced AME's rarely engage in repair and overhaul activities, but reciprocating engines of greater than 2,000 horsepower and all turbine powered engines must by law be repaired or overhauled by Approved Companies.

COMMENT

Problems which may affect the airworthiness of an aircraft are not reported to Transport Canada on any regular basis, but it does not appear that there is any clear statutory requirement to do so. The consequences of this absence of obligation were reviewed by the National Transportation Safety Board's inquiry into the DC-10 accident at Chicago.

The report stated in part as follows:

"The carrier did not report the repairs that were made to the two bulkheads to return them to service, and there was no regulatory requirement to do so. What constitutes a major repair may be subject to interpretation, but what is to be reported is not. The bulkheads were not altered; they were repaired. Even had the repairs been classified by the carrier as major, 14 CFR 121.707(b) only requires that a report be prepared and kept available for inspection by a representative of the FAA. Second, the regulation does not indicate that the contents of the required report include a description of the manner in which the damage was inflicted. The regulation and the evidence indicated that the purpose of the reports was to permit the FAA to evaluate the end-product to insure that the basic design of the repaired or altered part had not been changed.

The Mechanical Reliability Reporting criteria of 14 CFR 121.703 requires the certificate holder to report 'the occurrence or detection of each failure, malfunction, or defect concerning...' and then lists 16 criteria to which these apply. The FAA and apparently the aviation industry have traditionally interpreted 121.703 to apply to only service-related problems, which would therefore exclude reporting of the flange damage caused by maintenance. In view of this interpretation, the Board concludes that there is a serious deficiency in the reporting requirements which should be corrected.

Therefore, the Safety Board concludes that neither the air carrier nor the manufacturer interpreted the regulation to require further investigation of the damages or to report the damage to the FAA. However, the Safety Board views the omission of such requirements as a serious deficiency in the regulations."

The NTSB recommended the following changes:

"Expand the scope of surveillance of air carrier maintenance by:

- (a) Revising 14 CFR 121 to require that operators investigate and report to a representative of the Administrator the circumstances of any incident wherein damage is inflicted upon a component identified as 'structurally significant' regardless of the phase of flight, ground operation, or maintenance in which the incident occurred; and
- (b) Requiring that damage reports be evaluated by appropriate FAA personnel to determine whether the damage cause is indicative of an unsafe practice and assuring that proper actions are taken to disseminate relevant safety information to other operators and maintenance facilities."
(Emphasis added.)

I am of the opinion that the revised airworthiness legislation should incorporate in it the above stated requirements of the NTSB so that any matter which may affect the airworthiness of an aircraft or its safe operation discovered during maintenance or overhaul would be required to be reported forthwith to the Airworthiness Agency of CATA as well as to the Canadian Aviation Safety Board, the creation of which I recommended in Volume 1 of this Report.

From a practical point of view, it is apparent that the present practice of approved companies must be continued. There is, however, I think a significant deficiency in the present system. Once the status of an Approved Company has been recognized, the company is presently permitted without Transport Canada's approval to amend the manual previously approved by Transport Canada relating to maintenance and overhaul. It was the departure from the original approved DC-10 Manual in the overhaul of the aircraft which the NTSB found contributed to the DC-10 crash in Chicago. In my opinion an Approved Company should not be able to depart from the Maintenance and Overhaul Manual without prior reasonable notice to the Airworthiness Agency of CATA.

PART VII

THE CONTINUING AIRWORTHINESS OF AIRCRAFT

A number of documents prescribe certain operational steps or modifications that should be carried out in the operation of an aircraft to ensure its continuing airworthiness. These are either Service Bulletins issued by a manufacturer where compliance is voluntary, or Airworthiness Directives (AD) issued by the Airworthiness Authority where compliance is mandatory.

The term "Service Bulletin" is a term used to refer to certain documents issued by manufacturers of aircraft and aircraft components which contain service information. These are also called Service Letters and Service Information Circulars. An owner is not obliged to comply with a service document unless its contents form the basis of an Airworthiness Directive, or unless the document lists finite lives of aircraft or engine components or provides notification of a change to the maintenance schedule. Manufacturers also issue alert service bulletins which recommend maintenance action to overcome a potentially hazardous condition. Aircraft owners are not obliged by law to subscribe to the manufacturers' service documents. Approved companies and aircraft maintenance engineers, however, are required to remain current on aircraft types which they certify.

An Airworthiness Directive is the means used by the Airworthiness Authority to rectify functional or structural defects which may have a bearing on the safety of the aircraft. They require mandatory compliance in order to maintain the airworthiness standard of the aircraft and are normally based on the content of the manufacturers' service documents. Often interim ADs are issued while awaiting the completion of certain engineering tests, and these interim Airworthiness Directives are then superseded by later Airworthiness Directives. In Canada we adopt Airworthiness Directives issued by the Airworthiness Authority of the country in which the product was manufactured and also issue Airworthiness Directives of our own.

The brief prepared by the Air Administration on airworthiness included the following:

"Compliance with and Recording of Airworthiness Directives - The E & I Manual Part II, Chapter VI, Section 6.1, paragraph 6.1.2 requires the registered owner to comply with all ADs applicable to his aircraft. In addition, the E & I Manual Part I, Section II, Paragraph 2.2.8(g) requires the Aircraft Maintenance Engineer (AME) or equivalent authorized representative of an approved company to ensure that all applicable ADs have been incorporated in an aircraft before the aircraft is certified airworthy.

Details of the AD's compliance must also be recorded in the Journey and appropriate sections of the Technical Log.

In addition, the AME or equivalent is required to make the same certification on the annual Condition and Conformity Inspection (CCI) form. A block is provided on the CCI form for the recording of all ADs and any service bulletins incorporated since the last CCI was performed. Thus the regional airworthiness inspectors are able to verify the AD status of each aircraft inspected during their routine inspection duties."

The monitoring of Service Bulletins and Airworthiness Directives is an essential part of any continuing airworthiness program. The evidence disclosed that there is a complete lack of any system wherein the voluminous Service Bulletins and Airworthiness Directives are even compiled, let alone analysed. Many Service Bulletins do not appear to be on file, and when they are, the evidence disclosed that few, if any, are read. Service Bulletins, although not mandatory, are often of sufficient importance to be considered by an Airworthiness Authority with a view to making them mandatory by way of an Airworthiness Directive. Service Bulletins may not adequately emphasize the safety implications of the failure to take the advice set forth in them, and in the absence of a careful system of analysis of all Airworthiness Directives, inspectors are unable to properly determine whether they have been complied with. The absence of a careful program of analysis of Service Bulletins and Airworthiness Directives is because of the lack of emphasis within the Air Administration on continuing airworthiness. It is particularly important in the field of general aviation. I have already noted the significance of the lack of a continuing Airworthiness Section within the Airworthiness Agency of CATA.

A striking consequence of the lack of emphasis on continuing airworthiness was disclosed in the case study of the fatal accident in Coal Harbour, British Columbia, in September, 1978, and the tragic sequel of the fatal accident in Sechelt, British Columbia, in September, 1979, both of which were discussed in Volume 1.

In testifying as to the accident investigation of the Coal Harbour accident, Mr. T. W. Heaslip, Chief of Aviation Safety, Engineering Branch, stressed the lack of emphasis on continuing airworthiness as follows:

"A . . . If I might make a few comments right here, if anything comes out of this Commission is -- I know that you have heard this plea before, probably in other areas and so on, but it is kind of a resource plea, and it's a plea for my confrere, Mr. Ken Owen. His organization, as you have probably heard, is basically along -- he has the maintenance set-up and he has the engineering and test engineering areas and the engineering area is organized around validation certification, and my feeling is that there is a real need for Airworthiness -- and what this brings out, this accident and a lot of the others that you have looked at, and others that have occurred in the past, there is a real need for a continuing Airworthiness section. There is a need for --

Q You mean there isn't one now?

A I beg your pardon?

Q You mean there isn't one now?

A No, there is not. There is not individuals there now whose full-time concern is continuing Airworthiness; that is being concerned with the service difficulty reports, our material deficiency notifications, safety proposals from the field, information that comes indirectly from operators, the failures that are occurring, service bulletins from manufacturers around the world. The total gamut of information that is available is not -- they are not able to assimilate all of this and look at the continuing Airworthiness problems with individuals who are working full-time in this area."

Commenting upon Mr. Heaslip's evidence, Mr. Keith Walker, Senior Airworthiness Engineer, Structures, at CATA, testified as follows:

"Q Do you disagree with that?

A Basically, no, but it would be nice to have a continuing Airworthiness Section and have it altogether in a group, like having a little fire station ready to go every time a problem comes up.

MR. COMMISSIONER: It is not the problem coming, it is the analysis of the information being given before the problem arises, before any accident occurs, or incident happens. . . . it is the failure to study a service bulletin such as this and decide yourself whether inspection recommended by the manufacturer is adequate.

THE WITNESS: Yes. Well, he is mentioning though a special continuing Airworthiness Section. As he says Airworthiness is, approvals basically is a major part of Airworthiness, I think it accounts for about 50 per cent. I think continuing Airworthiness amounts to about 20 per cent and probably the section of which I am in charge does most of the continuing Airworthiness work."

Although Mr. Heaslip contributed the lack of attention given to continuing airworthiness to the lack of manpower, the totality of the evidence disclosed that it is by reason of policy. The policy as laid down by the Airworthiness Agency stresses the role of the agency in the type approval and certification of airworthiness. Continuing airworthiness is not given any priority, nor does it appear to be a matter of real concern on the part of senior management. This is apparent from the response given to aviation safety deficiency notices discussed in the ensuing Part and is illustrated by the following case study:

AIR CANADA FLIGHT 680, DC-9-32, SEPTEMBER 19, 1979

BACKGROUND

In January, 1976 Eastern Airlines reported to McDonnell Douglas that they had found a seventeen inch crack in the aft pressure bulkhead of a DC-9-30 with 22,500 hours total time and 23,000 landings.

As a result, an All Operators Letter was issued and subsequently a Service Bulletin to provide instructions for initial and repetitive inspections of the suspect cracking area. The May 25, 1976 Service Bulletin gave operators the choice of modifying the aircraft (at a cost of \$400 to \$500 per aircraft) to prevent cracking or doing regular visual or x-ray inspections at specified intervals. Although the Service Bulletin contained the statement "Repetitive inspections are required until such time as preventive modification is accomplished", this was interpreted to mean that the modification was not necessary, provided visual or x-ray inspections were done.

As I have noted, compliance with a Service Bulletin is not mandatory. Air Canada elected to inspect by x-ray procedure rather than making the modification. Mr. Bruce Aubin, General Manager of Engineering at Air Canada, explained that the company chose this course because their fleet of DC-9's had a lower time in service than Eastern's and only a few operators chose modification over inspection. He emphasized the following maintenance philosophy:

"... we were aware that the stress levels were reasonably low in the area of the bulkhead, and often, in our experience -- and this is where the years of experience of the carrier directly relating to the equipment he operates says that rather than rushing in with an improvement, which sometimes is not an improvement, you are better to accomplish a continuing inspection program to establish what the destination, if you like, or the modus operandi of the failure will be over, let's say, a number of airplanes, rather than just the evidence of one."

In 1976, FAA published a Notice of Proposed Rulemaking with their intention to make the modification mandatory. However, the Notice was withdrawn after consultation with operators. The FAA decided that the cracks were not as serious as originally believed and said:

"Additionally, the agency believes that the crack propagation data determined from an analysis of the failed parts, combined with the normal maintenance program, provide assurance that fatigue cracks will be detected and repaired before they became detrimental to the airworthiness of the airplane."

HISTORY OF THE FLIGHT

On September 19, 1979, Air Canada Flight 680, a DC-9 enroute from Boston, Massachusetts, to Yarmouth, Nova Scotia, suffered a rapid loss of cabin pressurization. The explosive decompression blew off parts of the rear of the aircraft. These included the fuselage tailcone and the aft cabin pressure bulkhead access door. A drink cart and a lavatory water supply tank were ejected from the aircraft. Although open sky could be seen through the resulting hole, the aircraft returned safely to Boston. No passengers were hurt, but one flight attendant received minor injuries.

AIR CANADA'S INVESTIGATION AND RESPONSE

Air Canada ascertained that the cause of the accident was fatigue cracking in the area of the aircraft which had been the subject matter of the earlier Service Bulletin. Pursuant to the Service Bulletin the aircraft had been inspected in May of 1979, and a x-ray was taken.

The day after the accident, Mr. William T. Ramage, Director of Maintenance Quality at Air Canada, and responsible for aircraft inspection, examined the x-ray. He concluded that:

"The crack indication was not delineated in an optimum manner. I do not want to mislead here. We felt there was sufficient indication that it was well within the scope of the folks who do this kind of work to detect."

He further testified that at that time the company did not have a system to ensure that the x-ray had in fact been examined after it had been taken. He, therefore, was unable to be certain that the x-ray had actually been examined, but stated "The likelihood would be that someone examined it and they did not see the indication".

Air Canada has now established a procedure to ensure that the x-ray has been analyzed after it has been taken by the technician. In the May inspection Air Canada had taken a single photograph, but, as a result of this experience, has upgraded the technique so that the technician will take three separate views.

Mr. Ramage added:

"A . . . I do not think, before the fact, anyone would have suspected that there should have been something else done in this case, as far as the technique goes.

Q You do have tremendous technical skill, and it is very efficiently run, but this would appear to be a fairly simple error, and even the large corporation, with its tremendous technical skill, makes, I suggest, an error, that common sense might have detected --that is, that there was no check that an X-ray had been read, and secondly, it was a rather rudimentary method of doing an X-ray.

A I would agree that there certainly was room for improvement in this process. I would also have to say that it is not one of the more complicated X-rays. Recognizing the kind of crack indications -- and I keep saying indications. People do not see cracks on X-ray films; they see an indication that leads them to the crack.

But we see indications that are much less visible at times that lead us to find problems than the one exhibited on this X-ray that is the subject of our discussion. The process, just to follow that up, is that when the interpreter of the X-ray film sees an indication, he then reports this to the Chief Inspector of the aircraft involved, and that Chief Inspector must go and find what has caused that indication.

Sometimes, we find it is the edge of another component; it might be cement; it might be a scratch.

We had a case just the other day where it looked like a crack in an area and it was a scratch. We find many things.

We had an X-ray film within the past month that indicated a crack in the subject bulkhead kind of area, where it was in an adjoining non-structural component that happened to be next to it, and the film had picked it up.

So, you have to go and find these things. And, yes, we have the process to do it, and normally it works well. I can say a little more about this one."

The new x-ray technique developed by Air Canada is a significant improvement since a single view might not properly show an oblique crack.

Consequent upon the Boston accident, Air Canada immediately inspected its fleet of similar DC-9's and found three aircraft with significant cracks in the same area. These aircraft were repaired before their next service flight.

Air Canada began to x-ray the 43-aircraft fleet at a rate of four per day. The aircraft also received daily visual inspection. The day after the accident, Air Canada began flying the DC-9's at 25,000 feet rather than the normal 35,000 feet in order to lower the pressure on the bulkhead. Three days later the aircraft were allowed to return to 35,000 feet. The company determined that the x-ray and visual inspections were sufficient and that decreasing cabin pressure would not increase the fatigue life of the cracking area.

THE AIR ADMINISTRATION'S RESPONSE

The Air Administration appears to have contented itself with the assurances given to it by Air Canada that the carrier was taking all necessary steps to ensure the continued airworthiness of the DC-9's. The initial steps taken by Air Canada were taken on its own initiative and not by way of response to any Air Administration Directive. The Federal Aviation Authority in the United States issued a series of Airworthiness Directives immediately upon learning of the accident, and the Air Administration also issued Airworthiness Directives patterned after those issued by the Federal Aviation Authority.

Pursuant to the initial FAA Airworthiness Directive, seven air carriers in the United States reported cracks in 33 aircraft out of the 119 inspected.

The evidence disclosed that the Air Administration did not have on file the 1976 Service Bulletin, and, thus, of course, was unaware of what was included in it.

When Mr. Owen was questioned about this by Commission Counsel, the following exchange occurred:

"A ...we did not have an arrangement with the company, McDonnell-Douglas, whereby the service bulletins for the DC-9 and DC-8 were automatically coming into our library.

...

Q So wouldn't it be essential for you to have this in order to carry out your responsibilities, if you decide to move in and inspect a company like Air Canada?

A I think that is correct.

Q Pardon?

A I think that is so, I agree with you. We now have a system whereby we receive all service bulletins.

Q But you say you get five thousand of them, there is so many of them you can't read them?

A Well that's five thousand in our library in Ottawa. But what we do also is distribute the service bulletins that we receive to the various regional office in accordance with the aircraft that they have in their region. So they at least, in the last few years, will have the basis against which they can look at a company when they do an audit.

Q Is there somebody assigned in Headquarters to read all these bulletins and decide which areas should get them?

A No, but we do ---

Q How is it done then?

A We do have an inventory of the aircraft that are in the regions. We do have the agreement with the regions as to what, not only service bulletins but what manuals they require and our central library in airworthiness is responsible for doing that distribution.

Q Is there a directive to all manufacturers and carriers or owners to send you these bulletins?

A That's part of the validation program.

Q But that wouldn't apply to most of the planes that are in the air today in Canada?

A Well okay ---"

Mr. Owen went on to say about the withdrawal of the proposed airworthiness directive:

"A ... Our understanding is that the FAA has satisfied themselves that all United States carriers had incorporated in their maintenance schedule the service bulletin.

Q You wouldn't be able to satisfy yourself that in Canada, because you didn't have the bulletin to begin with.

A That's true, from a DOT point of view, that's right.

...

I am sure you can pick up any of the old types of airplanes, the old type, for instance, being a DC-9 or DC-8 or 707 or a Consul, or a Beach 18, and we will be unable to present you or anyone else that comes with any assurance that we have all the service bulletins and, probably more important, all the revisions that have taken place over the years for those airplanes.

...

We, quite often -- we find, we see an airworthiness directive issued by a foreign country which calls up the service bulletin which we go to look for and we don't have it. Despite the fact that one of the conditions stipulated in the letter on the validation program was that we shall be supplied with so many copies of the appropriate document including the service bulletin."

Mr. Edward D. Jensen, of the Aircraft Operations Group, made the following observation with respect to the response of the Air Administration:

"A Well, I think that DOT should have moved in immediately when you have a structural failure of that nature, and go to the companies involved, grounding their aircraft and reviewing immediately any situation that exists with respect to that with regard to whether or not there are any service bulletins or ADs affecting the serviceability or the continued serviceability of those aircraft and, if there aren't, get more details on the kind of failure so that inspections can be authorized as quickly as possible to return those aircraft that do not have cracks or faults in that particular bulkhead to service.

Without that kind of intervention, you are relying on companies, and again in this case, you will find that the company really failed in this situation to control the maintenance program that protected the bulkhead from failure.

Q Leaving aside for the moment what led up to the fact that this particular weakness was not discovered -- we will be dealing with that in another part of your brief -- the evidence is that DOT was assured that Air Canada had conducted an inspection of all of their DC-9s and had satisfied itself that there were no other incidents of the type of cracking that had given rise to the tailcone failure.

As far as the procedure is concerned, what is wrong with that?

Assuming at the moment that DOT is satisfied that the Air Carrier, moving on its own initiative, has carried out an inspection that satisfies DOT that there are not any similar failures likely to occur, should it continue to ground the aircraft?

A I think so, because assurances from a company is one thing, but verification of those assurances is quite another. I think it is evident that the verification by the Department of Transport had not been completed. If one is to review that whole situation following the tailcone coming off, there were other DC-9s within Air Canada that also had cracks in the rear pressure bulkhead.

So, was their maintenance system adequate in the control features of the maintenance system to adequately check that bulkhead?" (Emphasis added.)

COMMENT

It is in the area of continued airworthiness that the Airworthiness Agency of CATA, could, in my opinion, make its greatest contribution, and yet this important field has been for the most part neglected.

In carrying out its responsibilities with respect to type approval and certificates of airworthiness of aircraft manufactured in Canada, the Airworthiness Agency is supported by and has the assistance of the Design Approval Representatives who are all highly qualified with great expertise.

I have recommended that the program for the validation of American manufactured aircraft for export into Canada should be replaced by less time-consuming and expensive programs for the familiarization of newly designed aircraft.

What is lacking is a continuing airworthiness division within the present airworthiness organization. I have noted that there is a complete absence of a careful compilation of all Service Bulletins and Airworthiness Directives, but what is equally disturbing is that most of the material which is on hand is not only not analyzed but, in fact, unread.

The employees of the Airworthiness Agency have the potential for performing the important function implicit in a continuing airworthiness program, but that can only be achieved if they are specifically assigned that task.

In the area of continuing airworthiness, something more is required than accepting the mere verbal assurances that everything is in hand. No matter how well intended the carriers and owners of aircraft may be when verbal assurances are given, they cannot help but be influenced by the economic impact of Service Bulletins and Airworthiness Directives and by the losses which would be incurred by the grounding of aircraft.

The Airworthiness Agency should establish its own presence and make its own determination. In cases such as the Boston incident noted above, and the loss of power on three engines of an Air Canada 747 aircraft, which incident was also inquired into by the

Commission, the Airworthiness Agency did not appear to make an independent inquiry. This can be contrasted with the direct intervention of the Federal Aviation Authority when an accident or incident occurs in the United States.

There is a real danger, particularly with respect to large carriers in Canada, that the regulated regulate the regulator.

In order for Airworthiness to carry out its responsibilities, there should be a reorganization to include a continuing airworthiness group within the airworthiness organization.

Furthermore, there appears to be a lack of qualified personnel who are capable of interpreting Airworthiness Directives issued by the Federal Aviation Authority which are the predominant ones in use in Canada. These personnel require special training to do so.

All manufacturers should be required to forward to the Airworthiness Agency all Service Bulletins, and all such bulletins and Airworthiness Directives should be carefully vetted by the continuing airworthiness group. Armed with such analysis, they would then be in a better position to determine the appropriateness of future Airworthiness Directives and in cooperation with the technical inspectors would be better able to carry out an efficient inspection program.

PART VIII

AVIATION SAFETY DEFICIENCY NOTIFICATIONS

As I noted in Volume 1, in April, 1979 the Aviation Safety Analysis Division, of the Aviation Safety Bureau, initiated a system of forwarding notices of aviation safety deficiencies to the heads of the departments within the Air Administration with respect to which the matter seemed to pertain.

The ASDN system was initiated pursuant to the following memorandum, dated February 15, 1979, from the Director General, Civil Aeronautics, to the branches:

"Aviation Safety Deficiency Notification

For some time, I have been concerned that safety problems identified in accident/incident investigations, special studies and other safety research have not been actioned on a timely basis. Also, it would appear that adequate follow-up procedures are not available to ensure corrective action has been implemented. A management tool is clearly missing. Accordingly, I have authorized the introduction of a procedure to be known as the Aviation Safety Deficiency Notification (ASDN) which will be the responsibility of the Director of Aviation Safety to manage on my behalf. This will start 1 March 1979. The following describes the purpose of the ASDN system and the procedures to be used. A copy of the form is attached.

Aviation Safety Deficiency Notification

The purpose of the ASDN system is to advise managers in CATA organizations of the presence of civil aviation system deficiencies having aircraft accident potential.

Initiation of ASDN's

ASDN action will be initiated by DAS following completion of the analysis phase of a safety study or upon information received from other agencies. The probable OPI will be contacted and initial discussions held, at which time, an outline of the problem and possible safety-action options will be made. The ASDN will then be completed and forwarded to the Branch for formal action. A written response to the notification showing the action which will be taken by the OPI will be required over the Branch Director's signature within 30 days.

ASDN Monitoring

The corrective action to be taken, as proposed by managers, will be recorded by DAS and will be followed up to ensure implementation has not been unnecessarily delayed."

(Emphasis added.)

Mr. J. A. Pierre de Niverville, Chief of Aviation Safety Analysis in the Aviation Safety Bureau, assumed the responsibility for the ASDN system. The deficiencies were discovered as a result of analysis made of accident investigation reports. The system provided for a period of time within which the head of the department to whom the notice was sent was to respond. The idea was an excellent one and considerable effort was put into it by Aviation Safety Analysis. Only known safety deficiencies were investigated through analysis of aviation safety data and the processing of safety recommendations and proposals.

Many safety deficiencies involved airworthiness and were directed to Mr. Kenneth D. J. Owen, Chief of Airworthiness. When asked how these deficiencies were dealt with within the Airworthiness Branch, Mr. Owen testified:

"The manpower has not been provided for this. . . .

So all of these, at the present time, have been coming through my secretary and I see them in a, I will say a cursory sense of the word. I glance at them, I look at the subject matters and I say are these flying, are these maintenance, are these manufacturing, or are these engineering? We have a record of them coming in in order to establish the kind of effort that they could be generating.

Then they go into whatever section appears to be appropriate according to the subject. They do not get any priority. They are viewed in the total scheme of things by either the flying side or the engineering side or the maintenance side. The only time they will get priority relative to all the other things that are going on is if, I will, put a note on it and in my judgment say, this looks as though we should move it quick or the section head says, because of the way he views it or because of the information they have, they say we should get on with this and move it and shift the priorities around in their own section. There is nothing more complicated or involved in handling it in the outline I have just given you."

(Emphasis added.)

The evidence disclosed as is evidenced from Mr. Owen's response that Aviation Safety Deficiency Notifications receive scant, if any, attention from the Airworthiness Division. In many cases there was no response at all. When responses were forwarded to Mr. de Niverville, seldom, if ever, did Airworthiness report that any action had been taken. The following are examples only of the innumerable cases on file with the Commission which are illustrative of the lack of response to deficiency notifications which disclosed serious safety deficiencies.

(1) CESSNA ENGINE FAILURES

An Aviation Safety Deficiency Notification noted that during the cold winter of 1979 in the Ontario Region several Cessna 172 and Cessna 150 aircraft experienced engine failures. Accident investigators determined that ice crystals in the fuel caused the failures. Since there is no known filter that will remove ice crystals from aviation gasoline, the suggested solution was an anti-icing fuel additive. However a fuel additive could affect the airworthiness of the aircraft. Therefore the Department contacted the FAA, the airworthiness authority regulating the manufacturer, to discuss the problem.

In July of 1979 a letter from Aviation Safety Analysis to the Licensing and Inspection Branch included the following paragraph:

"We believe that FAA and Transport Canada have not done all that is required to correct the several problem areas discovered in the above mentioned accident investigations and strongly suggest that a study of the C172 fuel delivery system be undertaken to ensure the efficiency of the system under all demands of temperature and engine fuel requirements."
(Emphasis added.)

The Airworthiness correspondence with the FAA included an internal memo of April 20, 1979 written by the Deputy Superintendent of Aviation Safety Investigation, Ontario Region. He made these recommendations:

"It is hoped that sufficient data is provided within this text and the appended documents to solicit support for the following, before the 1979/80 winter flying season:

- 1/ Issue an Aviation Safety Bulletin exclusively dedicated to informing the industry of the present problem. State what causes it; what aircraft types are more susceptible; why additives cannot be mixed in at the refinery; how amounts must be carefully controlled; which engine and airframe manufacturers have approved; and what additives are FAA and (hopefully) DOT approved. This should be written by a well qualified fuel specialist along the lines of information contained in Appendixes I, L, O, P, T, and V. It should stress that filling tanks and draining sumps is good, but not enough! Understanding through education is required. STATE A SOLUTION!
- 2/ Replace or delete the Flight Information Manual paragraph on 'Use of alcohol in Fuel Systems'. It seems sadly outdated, confusing, and conflicts with FAA approved manufacturers instructions. The above suggested Safety Bulletin would make an appropriate replacement.

I trust the foregoing will be accepted in the spirit with which its submitted. The writer is not an expert in this field; only an investigator who is becoming increasingly alarmed at the number of these occurrences and pessimistically aware that they cannot continue without adding lives to the large dollar toll that has already accumulated."
(Emphasis added.)

The evidence with respect to the Cessna engine failures was submitted to the Commission during the winter following the forwarding of the Aviation Safety Deficiency Notification relating to this matter. Mr. de Niverville told the Commission that to his knowledge the solution was not stated as requested above. Instead, the Aviation Safety Bureau issued an article about fuel icing in the safety letter that is sent to all Canadian licensed pilots. He said this article was not written by a well-qualified fuel specialist because the Bureau doesn't have one. He said the second recommendation has not been addressed because the question of additives has not yet been technically resolved.

The Airworthiness Chief, Mr. Owen, said that this icing problem "has been going on since airplanes have been flying in cold weather" and "I read nothing in here that hasn't been said many times before".

The Flight Information Manual mentioned above contained this statement:

"The use of alcohol in fuel is not recommended and is a poor substitute for proper fuel handling and management."

That manual has since been replaced by the Aeronautical Information Publication (A.I.P. Canada). The latest amendment of January 22, 1981 reads:

"2.2.3 Fuel Anti-icing Additives

All aviation fuels absorb moisture from the air and contain water in both suspended particles and liquid form. The amount of suspended particles varies with the temperature of the fuel. When the temperature of the fuel is decreased, some of the suspended particles are drawn out of the solution and slowly fall to the bottom of the tank. When the temperature of the fuel increases, water particles from the atmosphere are absorbed to maintain a saturated solution.

As stated in para 2.2.2, water should be drained from aircraft fuel systems before flight. However, even with this precaution water particles in suspension will remain in the fuel. While this is not normally a problem it becomes so when fuel cools to the freezing level of water and the water particles change to ice crystals. These may accumulate in fuel filters, bends in fuel lines, and in some fuel selectors and eventually may block the fuel line causing an engine stoppage. Fuel anti-icing additives will inhibit ice crystal formation. Manufacturer-approved additives, such as ethylene-glycol-monomethyl-ether (EGME), used in the prescribed manner have proven quite successful. The aircraft manufacturer's instructions for the use of anti-icing fuel additives should therefore be consulted and carefully followed."

(2) TRANSPORT AIRCRAFT DRAINS

On several occasions sizeable blocks of ice have fallen from aircraft and caused damage to houses and cars. After servicing an aircraft, ground crew may have neglected to replace a seal or "donut" that prevents water seepage from the aircraft toilet ground drain. At high altitudes the water forms ice that melts and falls when the aircraft descends to warmer air. Since aircraft usually descend over populated areas, the hazard is obvious.

An Aviation Safety Deficiency Notice issued to DLI in September 1979 says:

"As far as legislation is concerned, the Air Regulation 507 states 'no person shall create a hazard to persons or property on the ground or water by dropping anything from an aircraft in flight'. Whereas in the United States it appears that they have gone a little further and there are severe federal penalties for aircraft flying in the United States without the donut in place. Presumably Canadian carriers flying into the US, pay particular attention to this legislation when crossing the border.

In the interest of safety to persons and property and for environmental considerations, it is considered that Canada should enforce by one means or another, that these donuts must be properly installed while the aircraft is in flight."
(Emphasis added.)

Airworthiness replied to the Aviation Safety Bureau:

"... the prime responsibility for servicing the toilets on a day-to-day basis on aircraft is not considered a maintenance function. Maintenance recognizes the potential hazard, however, it is not a subject for Airworthiness Directive action. Therefore, we can only recommend a Safety letter be issued to the appropriate carriers on the subject matter."

Aviation Safety Analysis countered that argument with the following:

"While this may not be a maintenance matter, it is still a responsibility of the air carrier to take reasonable steps to prevent anything dropping off his aircraft that will create a hazard to persons or property. As such, we do not consider that the issuance of a Safety letter is the appropriate action. If Air Regulation 507 is unenforceable, then we suggest that a standard/regulation or requirement be introduced as per the United States by which this donut fitting has to be in place prior to the aircraft taking off. Failure to enforce such a requirement can only result in the continuance of a known hazard and the potential for serious consequences."
(Emphasis added.)

Mr. Owen was asked if any effort had been made to prosecute under this regulation. He said he was not aware of any effort to trace the ownership of the ice block and "We are basically saying to DAS we are satisfied with the situation the way it is".

(3) CESSNA 185 THROTTLE CONTROL FAILURES

In November 1979, the following Aviation Safety Deficiency Notification was issued:

"An accident occurred October 30, 1978 when a Cessna 185F crashed following an engine failure. Investigation showed that the engine failure was due to the 'swaged socket on the throttle control plunger guide separating from the ball at the control end on the engine end of the control assembly'. The separation made it impossible for the engine power to be increased or decreased. While being removed from the wreckage the mixture control similarly separated at the swaged socket. (Material Deficiency Notification (MDN) 5EA79, previously forwarded to LIA and attached as Appendix 'A', reports the technical investigation of the parts).

On June 15, 1979 another Cessna 185F crashed. Investigation showed the cause to be an engine failure precipitated by separation of the swaged fitting similar to that described in MDN 5EA79. Attached as Appendix 'B' is MDN 23EA79 which reports on the June 15 accident.

Following inquiries in the Central region it was ascertained that at least 30 throttle control failures have occurred in Cessna aircraft in that region - not all resulted in damage to aircraft since most were discovered during maintenance procedures. This information was passed to LIAF. It was further ascertained that Cessna has produced a modified throttle cable with a swaged socket which is an improvement over those parts fitted in the accident aircraft.

Cessna are installing the modified parts in newly manufactured aircraft but have no plans for the mandatory retrofit of existing aircraft. While the part may be purchased for existing aircraft, their owners have not been advised by Cessna of the potential problem of cable separation or the availability of the part. (FAA General Aviation AIDS reported the problem in December 1977 and again in December 1978 (App 'A')).

Following discussion with LIAF a letter was sent FAA August 9, 1979 requesting the intended course of action of FAA. Their response was that they would 'keep an eye on the field' despite the fact that FAA sources report 69 instances of similar failures in the U.S."
(Emphasis added.)

When he testified before the Commission in February 1980, Mr. de Niverville said the FAA had yet to issue an Airworthiness Directive. Mr. Owen confirmed that owners of Cessna aircraft had not been advised by the Department about the modification. He said his department tries to work with the airworthiness authority in the country that manufactures the airplane because they are in the best position to deal with the manufacturer.

When asked how long he was going to wait for the FAA to issue an Airworthiness Directive, Mr. Owen replied:

"I cannot say how long we are going to wait. I don't treat this one any more or any less than many other aviation safety deficiency notifications that come through and they are placed with all of the other problems in the house and are given what we think is their appropriate priority which doesn't say everybody agrees with the priority we give them but that is the way it is."
(Emphasis added.)

(4) FLOAT-EQUIPPED AIRCRAFT

On April 13, 1981 an Aviation Safety Deficiency Notification was issued with the following title, "Inadequacies During Docking Procedures - Float-Equipped Aircraft". Between July, 1976 and July, 1980, twelve accidents occurred in which death or serious injury were suffered by passengers when they were hit by the propeller during the docking operation of float-equipped aircraft. Passengers in disembarking from a float-equipped aircraft walked into the moving propeller blades. In most of these cases the injuries occurred to inexperienced persons while they were aiding in the docking of the aircraft and there usually had been no briefing and/or training given on docking procedures, including disembarkation. The pilots had been preoccupied with handling the aircraft and there had been a definite lack of supervision.

The ASDN suggested that proper planning, adequate crew training and operator insistence on conformity with good operating procedures could have avoided all of the above noted accidents. Additionally, danger signs such as warning strips on the floats and sides of the fuselage or cowlings to indicate the propeller arch would alert persons of the danger areas.

Mr. Donald E. Lamont, Director, Aeronautical Licensing and Inspection Branch, made the following comments on May 7, 1981:

"This problem and supporting documentation has been examined by the appropriate specialists in both the 'Licensing and Inspection' and the 'Standards and Legislation' Branches, who are of the opinion that legislation on fuselage and pontoon markings is unwarranted.

It is suggested, however, that a 'N-AME-O' be issued in the event that such markings might contribute to safer operations. To accomplish this, pertinent details should be forwarded to the Director of Airworthiness (DAB/L) along with your request."

Mr. Kenneth D. J. Owen, recently promoted to the position of Director of Airworthiness, replied as follows:

"I can't see any point in using people on this type of thing when we do not have enough P.Y. (Person Years) to handle mandatory stuff. Sorry. . . ."

Mr. Pierre de Niverville in a memo dated May 21, 1981 commented as follows on the position taken by Mr. Owen (DAB):

"I have no comment on DAB's position in this matter. Let the record speak for itself. . . ."

Finally, Mr. D. J. Peters, Superintendent of Safety Proposals in the Aviation Safety Bureau, wrote the following memo on May 22, 1981:

"It appears that A/DAS (de Niverville) is satisfied that DAB (Owen) is not going to do anything about this problem. . . We'll reflect DAB's response in the next quarterly update to DGCA.

Suggest you bring this to ASP's attention with a request that he put an article in the Aviation Safety Letter - unfortunately, it will be too late for this float season. As a result we can be sure that someone is going to die unnecessarily from this cause. A N-AME-O might have prevented it."
(Emphasis added.)

COMMENT

The aviation safety deficiency notification system was initiated because,

"...safety problems identified in accident/incident investigations, special studies and other safety research have not been actioned on a timely basis. Also, it would appear that adequate follow-up procedures are not available to ensure corrective action has been implemented. A management tool is clearly missing. . . ."
(Emphasis added.)

The Aviation Safety Analysis Division of the Aviation Safety Bureau under the leadership of Mr. de Niverville provided the missing management tool. For practical purposes, however, it was rendered useless by the lack of any meaningful response to the many Aviation Safety Deficiency Notices forwarded to the Airworthiness Agency. The failure to respond cannot fairly be attributed to lack of manpower, but rather to the policy emanating from the Chief of Airworthiness who appears to be of the opinion that the process is not a worthwhile one.

As I stressed in Volume 1 of this Report, one of the most important aspects of an accident prevention program is to take corrective action from what has been learned from the investigation of accidents. This is what the aviation safety deficiency notification system is all about.

It is hard for me to comprehend the casual and complacent view taken of the serious safety deficiencies disclosed in the Aviation Safety Deficiency Notices and the failure to respond to the recommendations for corrective action. I would have thought that a disclosure that in Canada there had been 30 engine failures with respect to one aircraft over a relatively short period of time and 69 instances of similar failures in the United States would have been responded to by immediate action, and that there would be no reason to await a Federal Aviation Authority Airworthiness Directive. When being advised that 12 accidents occurred in which death or serious injury were suffered by passengers when they were hit by the propeller during the docking operation of a float equipped aircraft, Mr. Owen's response that "I can't see any point in using people on this type of thing when we do not have enough P.Y. (Person Years) to handle mandatory stuff. . . ." is completely unsatisfactory.

It is not sufficient to be concerned only with those matters which are already the subject matter of legislation. One of the principal reasons for the analysis of accidents is to determine whether new legislation is required to prevent their reoccurrence. There is ample manpower if properly utilized to respond to the Aviation Safety Deficiency Notices. What is needed is a change of policy and not additional personnel. At present, the aviation safety deficiency notification system is dealt with in-house, and the recommendations made and the lack of response given are not matters of public record.

As I pointed out in Volume 1, if the Aviation Safety Analysis Division were part of an independent Canadian Aviation Safety Board and the procedures which are recommended in Volume 1 were adopted, greater heed would perforce have to be given to the aviation safety deficiency notifications, and both the notification and the response, if any, of Airworthiness would be matters of public record. Even then, a change of policy within the Airworthiness Branch recognizing the importance of aviation safety deficiency notifications is necessary if this very worthwhile system is to play its potential valuable role in an aviation safety prevention program.

PART IX

RECOMMENDATIONS

A CANADIAN AIRWORTHINESS CODE

1. The Aeronautics Act, the Air Regulations and subordinate legislation relating to airworthiness should be redrafted to provide a comprehensive Airworthiness Code.
2. The revision of the legislation referred to should be carried out by the Aeronautics Task Force in consultation with the aviation community.
3. The Federal Aviation Airworthiness Regulations and the Federal Aviation Operational Regulations of the United States should be used and adapted as the model for a Canadian Airworthiness Code, supplemented by such special conditions based on our own experience and required for Canadian aviation purposes.
4. Airworthiness standards should be related to the use proposed for the aircraft rather than by its weight.
5. For the purposes of determining the appropriate airworthiness standards, corporate aircraft should be equated with aircraft used for commercial air carrier purposes.
6. Commercial air carriers currently using aircraft of a gross take-off weight of under 12,500 pounds should be given a reasonable period of time to comply with the upgrading requirements of the proposed Federal Aviation Airworthiness and Operational Regulations to permit them to do so without undue financial hardship.

DESIGN APPROVAL FOR U.S. AND OTHER FOREIGN AIRCRAFT

7. With respect to aircraft manufactured in the United States of America, Canada should respect the Bilateral Agreement and accept the Certificate of Airworthiness for export of the competent American authority subject to compliance with any special conditions required to be met by United States' manufacturers as specified in the Canadian Airworthiness Code as provided for in Recommendation No. 3.
8. The current practice of the validation of transport category aircraft manufactured in the United States for export to Canada should be discontinued and replaced by a program for the familiarization of the aircraft by the Canadian airworthiness authority, and the determination that any special Canadian airworthiness conditions have been complied with.
9. Consideration should be given to the entering into of agreements similar to the Bilateral Agreement between Canada and the United States with other foreign countries having a history of providing responsible aircraft type approval and certification.

DOMESTIC TYPE APPROVAL AND CERTIFICATION

10. Tests essential for the determination of the airworthiness of the aircraft should be monitored by the Airworthiness Branch or its delegates.
11. Records should be made of such tests.
12. The records of such tests should be preserved as long as the aircraft's continuing airworthiness is under the surveillance of the Airworthiness Branch.

CONTINUING AIRWORTHINESS

13. The Airworthiness Branch should be reorganized to provide for a continuing Airworthiness Division with a view to placing greater emphasis on continuing airworthiness. Employees within the Air Administration should be assigned to the continuing Airworthiness Division with particular responsibility for that task.
14. The continuing Airworthiness Division should be responsible for the careful compilation, monitoring and analysis of Service Bulletins and Airworthiness Directives.
15. A training program should be introduced to enable personnel working within the continuing Airworthiness Division to be better qualified to interpret Airworthiness Directives affecting aircraft being operated in Canada.
16. Manufacturers of aircraft should be obliged to forward to the continuing Airworthiness Division all Service Bulletins relating to all aircraft operating in Canada.
17. The Airworthiness Code should require that operators and others, having knowledge of any matter or incident that may affect the airworthiness of the aircraft discovered during flight, ground operations or maintenance, report the same to the continuing Airworthiness Division.
18. The continuing Airworthiness Division should inquire into every matter or incident where the airworthiness of an aircraft is brought into question and should satisfy itself that all corrective measures have been taken to assure the continuing airworthiness of the aircraft.
19. The continuing Airworthiness Division should immediately review and re-evaluate the Aviation Safety Deficiency Notifications received by it to date, and should report to the Administrator on the action to be taken, or provide the reason for not taking action in response to such notifications.

DELEGATION OF AUTHORITY

20. The Design Approval Representative and the Airworthiness Inspection Representative systems should be continued subject to the changes hereinafter recommended.
21. The Approved Company systems should be continued subject to the changes hereinafter recommended.
22. The Design Approval Representatives and the Airworthiness Inspection Representatives should be licensed or accredited by Transport Canada.
23. The role and responsibilities of the Design Approval Representatives and the Airworthiness Inspection Representatives should be codified in the Airworthiness Code.
24. The Airworthiness Code should provide that no Design Approval Representative or Airworthiness Inspection Representative should be dismissed by an employer without the approval of Transport Canada, but which approval should not be withheld unless the dismissal was by way of reprisal because of the representative having carried out his obligation to Transport Canada.
25. The Airworthiness Code should provide that an Approved Company should not depart from the Maintenance and Overhaul Manual without prior reasonable notice to the Airworthiness Branch.

AIRWORTHINESS INSPECTORS

26. Airworthiness inspectors should be provided with additional clerical assistance which would permit them to spend greater time in the field and to maintain a greater presence in the aviation community.

CHAPTER III

DEPARTMENTAL AIRCRAFT

INTRODUCTION

Transport Canada owns a fleet of 88 aircraft composed of 53 fixed wing aircraft and 35 rotary aircraft. The responsibility for operating and maintaining this large fleet is that of the Air Administration. The fleet operated and maintained by the Air Administration is one of the largest aircraft operations in Canada. The aircraft range in type from single engine fixed wing through multi-engine jet transports, and from single engine rotary wing through multi-engine jet helicopters. The aircraft are used to perform various functions within the Air Administration from routine calibration of navigational facilities to the transportation of the Prime Minister and members of the Cabinet on government business.

For some time, concern has been expressed about the airworthiness and maintenance of departmental aircraft, which concern was specifically referred to in the Order-in-Council pursuant to which I was appointed.

For the period covered from 1976 to March 4, 1981, there were 14 accidents involving departmental aircraft.

In May of 1979, the pilot and co-pilot of a Transport Canada Beechcraft 90 were fatally injured when the aircraft suffered a right wing separation on a calibration flight. On February 28, 1981 a Transport Canada Twin Otter, while on a training flight, crashed near Hamilton, Ontario. Two airways inspectors were killed and a third employee of Transport Canada was seriously injured.

It is no wonder, therefore, that safety concerns have been expressed in no uncertain terms by employees within the Air Administration as to the inadequacy of the airworthiness and maintenance of the fleet. The Aircraft Operations Group of the Air Administration particularly have been extremely critical not only of the airworthiness and maintenance of departmental aircraft but also of the operation of the fleet, and, as will be subsequently observed, the basis of their criticisms has been proved to be valid by the series of internal audits which were brought to light by Commission Counsel.

PART I

THE AUDITS

The 1975 Audit

In 1975, Transport Canada instituted the first audit of departmental aircraft of its fleet service at Ottawa. Nine employees of Transport Canada were assigned to the audit team, and the audit was conducted between November 24, 1975 and January, 1976. The following is a summary of the findings of the audit team:

- "1. Pilot ground and flight training programs are inadequate in most cases.
2. Insufficient flight training and proficiency checks conducted to qualify pilots in accordance with the requirements of the Flight Operations Manuals.
3. Inadequate records to satisfy the requirements of the Flight Operations Manuals.
4. Pilots assigned to flight crew duties without meeting the requirements of the Flight Operations Manual.
5. Operational Control System (Dispatch and Flight Watch) deficient in one or more of the following areas:
 - (a) Organization
 - (b) Training
 - (c) Manuals
 - (d) Procedures
 - (e) Equipment
6. Passenger - carrying flights are being conducted with inadequately trained Flight Steward Crew Members.
7. In flight safety procedures of Flight Stewards inadequate.
8. Aircraft safety provisions/features are inadequate or misplaced.
9. Some passenger flights are being conducted with fatigued Flight Steward Crew Members.
10. Flight Services Maintenance Organization are not complying with the policies and procedures as outlined in the Maintenance Manual and are not operating within the scope of their company approval."

With respect to point no. 4, the report of the audit team noted:

"... For example, pilots are not completing initial and re-current ground and flight training requirements, proficiency checks are not being given within the stipulated schedule. There is a decided lack of emphasis on emergency drills and the programming of ditching drills and high altitude indoctrination cases is poorly controlled."

The audit team made the following recommendations:

- "1. Management must ensure immediate compliance with Airworthiness Directives, Air Regulations, and Air Navigation Orders.
2. In the interest of safety, the Inspection Department and Maintenance Managers must maintain a closer surveillance of line maintenance, log control, and records sections to ensure compliance with Air Navigation Orders, and Engineering and Inspection Manual.
3. Maintenance Managers and Inspection Department must review, amend and introduce procedures as required in their maintenance manual, then ensure compliance with same.
4. The Inspection Department must conduct a program of audits of both Ottawa and Regional bases, to ensure that M.O.T. policies, standards, and procedures are complied with. The results of these audits should be recorded and filed.

Conclusion:

This office recommends that a follow-up inspection be conducted within a reasonable time to ensure compliance with the above recommendations.

In addition, this office is prepared to offer whatever assistance may be required by the Chief Inspector and Maintenance Managers to resolve the discrepancies as outlined in the subject audit."

It is to be observed that the audit team discovered serious aviation safety deficiencies: inadequate training programs, insufficient training checks, inadequate records, deficient operational control systems, unqualified pilots, inadequately trained crew members, inadequate in-flight safety procedures, inadequate aircraft safety provisions, fatigued crew members, and non-compliance with maintenance policies.

Unfortunately, many of the noted deficiencies were not rectified at that time, nor indeed, as will subsequently appear, have they been rectified to date. Furthermore, little heed appears to have been given to the recommendations.

The 1978 Audit

In 1978, a second audit of the fleet service at Ottawa was carried out by an audit team composed of ten employees of the Air Administration. Included in the report of the audit team were the following findings:

- "1. The Ontario regional office conducted an audit in 1975 and the discrepancies noted at that time have not all been fully rectified. . . .
2. Unauthorized extensions are being granted by supervisors for airframe overhaul and component times. . . .
3. The technical records (Section V tech logs) which were sampled indicate numerous airframe and engine component overhaul times were being exceeded beyond their authorized limits. . . .
4. The maintenance control systems are fragmented and do not always readily display when items are 'due' for maintenance. The company Manuals require changes to reflect effective systems.
5. Numerous flight manual amendments have been deemed necessary through F.S. D/Ds, but none have been submitted for D.O.T. Regional or Headquarters approval. In addition, no amendments were found in the aircraft flight manuals. . . .
6. The master TBO schedules contain reference to items listed as 'On Condition' and no associated maintenance tasks are listed to coincide - maintenance personnel are under the impression this means allowing the item to 'fly to failure' as a 'Condition Monitored' item which is incorrect. The master schedules must be changed to reflect the appropriate meaning.
7. The company maintenance manual Volume II (procedures manual) makes reference to a 'component failure trend reporting system' - 'on request' - the system presently in use is not according to the manual and in addition the entire subject matter requires to be rewritten in order to be more objective and meaningful.

8. The company maintenance manuals are lacking in providing clarified and detailed duties and responsibilities of key maintenance personnel - e.g. the technical records section is responsible to the Chief Inspector according to one manual; however, another manual states this section is responsible to the A.M.F.A. (Supervisor of Hangar Services)." (Emphasis added.)

The report included the following further findings and the following summary:

- "1) Aircraft Flight Manuals found to be not current on various aircraft types because of unauthorized or incomplete amendments contained in various copies.
- 2) Drawings involving major modifications have not been approved.
- 3) Drawings missing from approval packages and records.
- 4) Flight manual amendments, as indicated by Internal Service Directives (F.S.S.D.), could not be found nor could it be determined which office was to be responsible for their origination.
- 5) AE-100 Forms and compliance programs are incomplete.
- 6) DAR's are unaware of existing company policies and procedures, and
- 7) Company control of the DAR system and control of records is not adequate.

SUMMARY

- a) The safe operation of D.O.T. aircraft is being compromised because flight personnel are being supplied with invalid or unacceptable operational documentation (i.e. flight manual information).
- b) Incomplete approvals are being made available to D.O.T. flight service maintenance personnel for incorporation onto D.O.T. registered aircraft.
- c) DAR system and personnel are involved in areas of non compliance with N-AME-AO 45/68 and,
- d) Regulation and control of DAR system and records is weak." (Emphasis added.)

The report of the 1978 audit team was not communicated to the Director of Flight Services. When questioned as to why the Director of Flight Services was not advised as to the findings of the audit team, the Administrator gave the following explanation in response to questions by Commission Counsel:

"Q Just one question with respect to the non-communication of the 1978 audit to the DAF. Is it your understanding that the DAF was told by someone that the 1978 report did not impact on safety?

A That is my understanding.

Q Have you looked at the 1978 report?

A Yes, I have.

Q Would you agree that it does have a bearing on safety?

A I guess I would have to explain what I mean by that. I don't feel that there was any gut safety issue involved."
(Emphasis added.)

It is to be observed that the 1978 audit noted that the deficiencies discovered in the 1975 audit had not yet all been fully rectified, and that the safe operation of departmental aircraft was being compromised.

The 1979 Audit

Consequent upon the fatal accident of the C-FCAS Beechcraft 90 at Dorval, Quebec, on May 1, 1979, previously dealt with in detail in Volume 1, a special audit was initiated at the insistence of the Aircraft Operations Group. The members of the audit team were agreed upon by the Aircraft Operations Group and the Director General, Civil Aeronautics, and it was headed by Mr. Kenneth D.J. Owen, Chief of Airworthiness.

The audit team undertook the following assignment:

- "a) Review of the 1975 and 1978 audits of Flight Services (T58) by Headquarters, the latter of which was never presented to DAF.
- b) Audit OCAF.

- c) Audit QCAF.
- d) Review and draft findings.
- e) Brief and discuss with DAF.
- f) Brief DGCA and AO Group.
(Emphasis added.)

I set out hereunder the findings and recommendations:

"Findings

A. Maintenance

a) Organization

1. The central maintenance system is not clearly stated in the Maintenance Manual and hence not clearly understood by all personnel.
2. The RSAM mandate is not clearly stated nor is relationship of the RSFO's, RSAM's and DAF understood by the employees within the organization.
3. The RSFO's mandate is not clearly stated nor is it understood by the various RSFO's. There are many variances in the operations of the system between regions.
4. There is no clear understanding of the relationship and lines of authority between RSAE's, AFM and RSAM's.
5. There is a lack of system control over avionics work on aircraft in the regions.

b) Maintenance - Direction/Policy/Procedures

1. No directive has been issued as to what standard the maintenance system must comply with.

i.e. Approved company VS Private Operations; at the present there is non compliance with E & I Manual as a commercial operation.
2. There is no policy with respect to special maintenance considerations for particular role of the aircraft. i.e. Low level, high gross weight operation as compared with high level normal transport operation.

3. There is no policy to ensure maintenance has an input into the choice of aircraft and/or equipment.
4. There are no procedures governing the Quality Control and acceptance of a new aircraft at the factory before delivery.
5. The present method of communicating airworthiness directives via telex is unreliable.
6. One inspector cannot provide sufficient quality control of maintenance in all the regions.
(i.e. one visit every 18-24 months is insufficient).
7. The method of ensuring that repetitive inspections are carried out not standardized within the system, (S.I.s, AWD, etc.)
8. The interpretation of Special Inspections and/or complicated airworthiness directives is left to the individual AMEs.
9. There is insufficient documentation of the airworthiness status of aircraft transferred between regions.
10. The morale of the maintenance organization has been degraded by the lack of policy direction and by the current situation.

B. Operation

1. The calibration aircraft, particularly the King Air 90's, are operated at max allowable gross weight 80-90% of time.
2. The calibration aircraft are operated at 2500 feet AGL or less, 90% of the time.
3. The aircraft have been operated in excess of maximum gross weight a significant portion of the time, particularly prior to 1975.
4. Finding's 1, 2 and 3, have decreased the expected life of critical aircraft components by a factor of 5-10 times.
5. The technology for determining this decrease in expected life of critical aircraft components was available at the time the calibration aircraft were purchased.
6. Finding (4) is extremely critical for CAR and FAR 23 aircraft (King Air 90, 100 and Queen Air aircraft).
7. False entries were detected in aircraft journey log books;

8. ANO Series 8, No. 2 is not being complied with by Transport Canada.
9. All levels of management up to and including RCCA's are aware of Items 1, 2, 3, 6 and 7.
10. The system of determining weight and balance is inadequate and not standardized in all regions.
11. Auditing of Transport Canada's Operations is not sufficiently comprehensive.
12. Pilots are discouraged from putting snags in log books and expressed concerns that they are not cleared with any urgency.
13. Helicopter Pilot Proficiency Training and Pilot Proficiency Checks are not in accordance with Transport Canada's Operational Manual.
14. The King Air aircraft is not adequate for the calibration role, particularly long range.
15. The above noted equipment and system deficiencies have been common knowledge for many years, however, no positive action was ever taken to correct the situation.

C. DGCA

1. The audit report of October/November 1978, was not presented to DAF. The special audit team presented DAF with a copy of the report on May 8, 1979, for his perusal.
2. Transport Canada management has not specified whether Air Regulation 103, ANO Series VII, No. 2, 3 and 6 must be complied with in the operations of Transport Canada aircraft.
3. Communication of basic facts, to DAF and Regions, following accident of CF-CAS did not occur.

CONCERNS EXPRESSED BY FLIGHT INSPECTION TECH'S. - UL

1. In early years of King Air's overloading was routine.
2. Flights are regularly in turbulent air conditions ranging to moderate. (Air sickness, hitting roof, broken pencils, etc.)
3. None of the King Air's are adequate.
4. Sharp turns and pull-ups are often necessary.

5. Toilet facilities are grossly inadequate.
6. Air conditioning and heaters inadequate.
7. Recently, more and more snags are showing up on King Air's.
8. Loose suitcases, trunks and equipment in aisles.
9. Pilots without calibration training are designated as Captains on calibration flights.
10. The degree of danger always recognized insofar as mid-air collisions but they never fathomed the possibility of a wing coming off.
11. Technicians will not fly again without written assurance that positive and tangible steps have been taken to prevent a reoccurrence of this type of accident.

This must cover:

- a. Aircraft weight control.
- b. Equipment stowage.
- c. Adequate special inspections.

CONCLUSIONS

1. Transport Canada has failed to develop a system that would ensure that Transport Canada Aircraft are operated in accordance with the existing Regulations and Orders.
2. Transport Canada has failed to ensure that the aircraft assigned to specific roles within the organization are adequate for the role.
3. Transport Canada has failed to develop an aircraft inspection system that would ensure the continued airworthiness required to sustain aircraft in the calibration role.

RECOMMENDATIONS

Maintenance

1. Direction must be given that aircraft maintenance will be carried out in accordance with ANO Series VII.

2. Centralized maintenance system must be implemented and the roles must be clarified through a re-write of the Maintenance Manual, including terms of reference for all related personnel. This must include computerization of maintenance records and the capability of alerting mandatory inspections.
3. Sufficient Quality Control inspector's positions must be established by Headquarters to ensure Quality Control base inspections are carried out at least twice a year.

Operations

1. Direction must be given that Transport Canada operation will be in accordance with ANO Series 7.
2. An in-depth auditing system must be developed and implemented to ensure compliance with the Regulations, Air Navigation Orders and Policies.
3. The airworthiness of the calibration fleet must be established and appropriate action be taken on the Beechcraft calibration fleet to restore airworthiness of the fleet.
4. Data must be obtained to determine what steps must be taken to ensure continued airworthiness of the calibration fleet.
5. The data obtained in (4) must be used in decisions to purchase new calibration aircraft.
6. A standardized system of preparing weight and balance control must be implemented.
7. The specifications for future calibration aircraft must be developed in consultation with Telecommunications, Airworthiness, Maintenance and Operational experts."

(Emphasis added.)

While the Administrator was being questioned about the accuracy of the findings of the 1979 audit by Commission Counsel, the following exchange occurred.

"Q I take it then, although you deferred insofar as dealing with the details of the report to Mr. Lamont, that you don't dispute the accuracy of the findings?

A What I said yesterday was that the accuracy of the findings were subject to further examination by the Director General's staff.

Those that were agreed with as described, an implementation plan would be developed to correct the situation.

Q No, I just want to know now whether you are disputing the accuracy of the findings.

Now, are you saying, that you don't accept this report until you have had a further investigation?

Is that what you are saying?

A That is normal practice. When a review is done by a review group or an audit group, it establishes its findings, makes recommendations and it is then the responsibility of the specialists areas concerned to make their comments with respect to the findings and the recommendations.

Sometimes the facts, it is the reverse of what I was going to say. Sometimes the recommendations are not necessarily the best solution to overcome the problem that is recorded in the findings.

Q Well never mind the recommendations. You don't intend the Director General, Civil Aviation, to do another investigation do you?

He may make comments but as far as the findings of fact, are you contemplating a further investigation with respect to those matters?

A No, I don't contemplate it, I just state that it is a possibility in each and every incident where an audit or a review is done. That's normal management practice. . . ."
(Emphasis added.)

The Administrator elaborated upon the "normal management practice" as follows:

"A . . . we think of the concept of an audit as being the uncovering of facts or factors that would enable a very comprehensive discussion to take place with Management to then pursue the findings further.

If an audit report doesn't contain sufficient evidence to satisfy Management that, in fact, the conclusions drawn by the auditors are correct in light of the facts that have been disclosed, then Management, we believe, whether it is an air carrier or in-house, has to be given the opportunity to conduct its own fact-finding process and, very often, this is done in more depth and with more sensitivity and understanding, but using the basic finding of the auditors.

Q So, the auditors' report might point the way to areas of further investigation?

A That's right."
(Emphasis added.)

The 1979 audit disclosed that many of the deficiencies noted were well known for many years, but "no positive action was ever taken to correct the situation".

In my opinion the findings called for immediate action: aircraft were being operated in excess of maximum gross weight, the decreased life expectancy of certain components was a situation that the audit described as "extremely critical", and false entries were detected. Of equal significance, the 1979 audit was the third of a series of audits, all of which disclosed the unsatisfactory state of departmental aircraft as well as serious deficiencies in the operation of them.

Although the aircraft used for calibration purposes were grounded for a period of time, the three audits made little real impact. The cumulative effect of the three audits, as determined by the several teams of auditors, disclosed that inadequate training programs, inadequately trained crew members, inadequate safety procedures, inadequate maintenance and the failure to rectify deficiencies had compromised the safe operation of departmental aircraft. However, in responding to a question by Commission Counsel as to why there had not been a more effective response to the disclosed deficiencies, the Administrator stated as follows:

"... with respect to the three audits, '75, '78 and '79. I have examined these audits in detail, and I am able to confirm the statements that I made to this Commission several weeks ago, that the audit reports do not disclose any factors to indicate that the operations are unsafe...."
(Emphasis added.)

The 1981 Audit

The response to the 1979 audit appears to have been the formation of an additional audit carried out between February 2 to March 6, 1981. Included in that audit were the Ottawa Flight Services facilities, the Regional Flight Operations facilities coast to coast, and five Coast Guard helicopter operating bases.

The Executive Summary of the audit report included the following:

"More than 1½ years have elapsed since DAF was directed, (June 1979) by DGCA, to operate in accordance with ANO's Series VII, Nos. 2, 3 and 6. No deadline was established for compliance with that directive.

Some progress has been made toward complying with that directive but much remains to be done before total compliance is achieved.

The deficiencies identified cover a wide range of operational and maintenance matters. In some cases these same deficiencies had been identified on previous audits in 1975 and 1978."
(Emphasis added.)

The audit report disclosed serious aviation safety deficiencies in the airworthiness of the aircraft and in the operation of the departmental fleet. The following are some of the deficiencies found by the various audit teams:

"Records and Documents

Record keeping and the documents provided for that purpose were the subject of more deficiencies than any other topic.

The following is a list of the major areas where deficiencies were identified.

- a) Journey Log Books
- b) Minimum Equipment Lists
- c) Check Lists
- d) Defect Reporting
- e) Training Records ('As a general observation it can be stated that training records were unsatisfactory across the entire system'.)
- f) Libraries and Manuals
- g) Aircraft Documents and Licences.

Operational Control and Dispatch

A significant number of deficiencies were identified in the area of operational control and dispatch. The following is a list of the major areas of concern.

- a) Flight Watch, Communications
- b) Flight Authorization, Release
- c) Operational Control

- d) Operational Flight Plans
- e) Weight and Balance
- f) Fuel and Oil
- g) Weather Information

Flight Watch, Communications

- (a) DAF's flight watch system, particularly in Regions is inadequate and is not approved by DGCA. Aircraft are unable to maintain radio communications throughout flights due to lack of adequate ground and aircraft radio equipment. Flight watch is not maintained during all hours of flight operations. The RSFO or his delegate is not aware of the status and location of aircraft at the termination of flight operations when the aircraft are away from base.
- (b) An adequate flight watch system must be developed and subject to approval by DGCA, implemented. Communications capability both ground and airborne must be improved. A system to assure that all flight operations have been safely completed must be developed.

Fuel and Oil

- (a) Failure to properly enter correct fuel and oil quantities in journey logs, and discrepancies between these entries and those used in calculating weight and balance, are indications that fuelling procedures are inadequate. There appears to be a casual attitude among crews with respect to refuelling away from base. There is a lack of precise fuel calculations for a particular operation. Fuel is loaded in the form of full tanks or standard loads for particular sectors or activities. This results, in many cases, in the carriage of fuel loads far in excess of the fuel required which can have adverse effect upon aircraft performance, be a cause of wasted fuel merely to transport the excess, and can result in operations at weights in excess of the certificated weights. Failure to accurately monitor fuel consumption can result in maintenance being unaware of deterioration of aircraft performance.

Weather Information

- (a) The weather information available at Ottawa dispatch is inadequate in that information west of Winnipeg is not available on the teletype.

Training and Checking

- (a) One of the deficiencies identified in each of the reports submitted by the audit teams was the inadequacy of the training and checking activities of Flight Services. No comprehensive training program for

all flight operations personnel and dispatchers has yet been submitted to DGCA for approval as required by ANO Series VII, Nos. 2, 3 and 6. The various reports identified a lack of

- a) recurrent ground and flight training,
- b) line indoctrination training,
- c) high altitude training,
- d) emergency procedures training,
- e) helicopter external load training,
- f) survival training,
- g) dinghy drill,
- h) dangerous cargo handling training,
- i) dispatcher training,
- j) cabin attendant/crewman training.

In addition competency checking is not being carried out as required by the Series VII, ANO's. Company Check Pilots have not been nominated, examined, or approved as required by those Orders.

Passenger Safety

In the interests of clarity the deficiencies noted with respect to passenger safety are listed separately.

Deficiencies were identified in the following areas.

- a) passenger safety briefing,
- b) evacuation procedures,
- c) aircraft interior design,
- d) safety features cards,
- e) safety equipment,
- f) emergency equipment

Deficiencies included lack of standardized passenger briefing procedures, lack of approved cabin attendant stations, need to revise evacuation procedures, provision of procedures for handling handicapped passengers, interior designs that restricted access to emergency exists, need for revised and approved safety features cards, need to revise the location of certain emergency equipment such as fire extinguishers. The Cabin Attendant Manual needs to be revised to ensure that various discrepancies identified in the team report (Appendix F) are rectified and the manual approved.

Maintenance

The report of the maintenance audit identified deficiencies in the following areas.

- (1) (a) ANO Series VII, Nos. 2, 3 and 6 are being violated in several areas. These violations are mainly associated with failure to comply with the approved Maintenance Manual or the absence from the manual of procedures currently in use.
- (b) The present Maintenance Manual does not specify procedures, duties and responsibilities that Regional bases require.
- (c) The present Maintenance Manual contains requirements that are unworkable in the Regions.
- (d) Discrepancies identified in the 1975 and 1978 audits have not been rectified. These include such matters as the issuance of Flight Services Service Directives; the issuance of Flight Manual supplements; the conduct of internal audits, and the situation in Stores regarding quarantine and bonded areas."

(Emphasis added.)

The audit also made mention of the following particular deficiencies:

EXECUTIVE FLIGHT, OTTAWA - CREW QUALIFICATIONS

Observation

- "1. Unqualified flight crew member acted as co-pilot on transportation flight (No PPC on type).
2. Pilot Proficiency Checks have been conducted by persons other than approved check pilots.
3. Some line checks have not been completed or have been conducted by unapproved persons."

Effect

- "1. No assurance that crew member was proficient.
2. Improperly checked crews.
3. Improperly qualified crews."

EXECUTIVE FLIGHT, OTTAWA - CREW TRAINING

Observation

- "1. Pilots records do not indicate that the emergency training other than High Altitude Indoctrination lectures is carried out.
2. Records indicate that emergency aeroplane evacuation and ditching procedures are not carried out by flight crew members."

Effect

"No assurance that training is satisfactory or that training is conducted."

OTTAWA - CREW QUALIFICATIONS

Observation

"Crew being dispatched on transportation flights when their pilot qualifications are not in accordance with the requirements as specified in the Operations Manual.

Transportation flights carried out by crews whose records indicated that they had not completed the required recurrent aeroplane type training.

Transportation flights carried out by pilots with elapsed Instrument rating, without PPCs and by pilots not qualified on aeroplane type."

Effect

"Unqualified crews assigned to Transportation Flights."

OTTAWA - HEADQUARTERS STAFF PILOTS

Observation

- "1. Few Headquarters staff pilots complete the required entries in the journey log in accordance with the requirements of ANO Series VIII, No. 2.
2. When a Headquarters staff pilot fails to meet the requirements of the ANOs or Operations Manual, who is to discipline them."

Effect

- "1. Unprofessional conduct.
2. Lack of discipline."

OTTAWA - CABIN ATTENDANT TRAINING AND RECORDS

Observation

- "1. Initial c/a (cabin attendant) training program in manual is not sufficient.
2. There is no recurrent training program.
3. Training records are incomplete."

Effect

"Possible degradation of passenger safety."

AIRWORTHINESS

"No provision for update and recurrent training for AME's . . .

Leads to incorrect maintenance procedures."

"Inadequate Stores Control."

"No control of incoming correspondence. . . .

Non compliance with Engineering and Inspection Manual. . . "

"Possibility of incomplete maintenance and unsafe working conditions. . . .

Improper certification of instruments."

"Tools and equipment out of calibration. . . .

Procedures in Maintenance Manual not being followed."

"Periodic inspection times being exceeded.

Lack of centralized maintenance control."

"Defects being deferred by AME's, lead hands, and crew chief in Regions. . . .

Unauthorized return to service."

"Aircraft operated in unairworthy condition.

Compromise passenger and crew safety."

"The format of the Transport Canada aircraft journey logbook is in contravention of ANO VIII, No. 2. Some of the observed journey log entries were incomplete and/or inaccurate. . . .

The journey log is a legally required document complete and accurate recording of the required information is an essential tool in both the operational and maintenance activities. Failure to satisfactorily complete these requirements has precluded the use of this tool for its intended purposes."

"Untrained personnel performing tasks that may be safety essential."

"There has been occasional operation of aeroplanes at weights in excess of the maximum certificated take-off weight in contravention of Air Regulations 218(a). . ."

HELICOPTER OPERATIONS:

Journey Log Entries:

"Unsatisfactory attitude among crews and inadequate performance monitoring of aircraft engines.")

Search and Rescue:

"Helicopter crews are tasked for search and rescue activities for which they are not trained or equipped."

Pilot Proficiency Checks:

"It appears that Pilot Proficiency Checks, although being completed, are to fulfill the requirement only. Check reports examined were completed with little flight time, comments were rare, checks were done on mutual flying trips and check pilots have received no training in the conduct of Pilot Proficiency Checks."

Pilot Currency:

"Sub standard pilot currency standards."

Flight Planning, Flight Watch and Air-Ground Communications:

"Flight Planning and Flight Watch is considered inadequate.

Air/Ground communications are at best - poor. . . .

Crew complacency. Inadequate direction and supervision.

Out dated communications equipment."

Pilot Training and Records:

"No recurrent flight training carried out.

Pilot records inadequate. . . .

Unsatisfactory pilot training standards.

Potential for dispatch of unqualified crew or crew with invalid privileges."
(Emphasis added.)

The Executive Summary of the 1981 audit concluded as follows:

"It was generally agreed by the audit group that, while the deficiencies identified had the potential to adversely affect safety, there was no indication that they had done so to date.

Mention should be made of the fact that there is no real incentive, outside of a natural desire for compliance, for DAF to earnestly pursue the achievement of a management goal to have Flight Services operate to commercial standards. The issue or withdrawal of an Operating Certificate, with its attendant financial implications, is not a factor in the case of DAF. Nor does a reward or punishment situation exist."
(Emphasis added.)

COMMENT

In Volume 1 of the Report, I stated:

"One of the matters which gives me most concern . . . is the resistance of senior management to criticism, often I think of a constructive nature which emanates from within the Air Administration itself, and the failure to take prompt action to counter aviation safety deficiencies when requested to do so by less senior employees within headquarters, or when action is requested from the regions."

The responses of the Air Administration to the Departmental audits conducted in 1975, 1978 and 1979 are further examples of such resistance. That is not to say that senior management, who have the ultimate responsibility, are bound to react to every finding and recommendation contained in an audit report. But the audits of 1975, 1978 and 1979

disclosed serious aviation safety deficiencies with respect to the airworthiness, maintenance and operation of departmental aircraft. Each audit subsequent to 1975 noted that the deficiencies discovered in the earlier audits had not yet been rectified, nor were most of the recommendations contained therein implemented.

Having regard to the serious nature of the aviation safety deficiencies noted in the audits, the only legitimate reason for senior management to reject such audits would be on the basis that there was available to them evidence of a more reliable nature which put into question the validity of the findings and recommendations.

The audits of 1975 and 1978 were carried out by persons assigned to that task by management. The audit of 1979 was conducted as a result of an agreement between the Aircraft Operations Group and the Director General, Civil Aeronautics, and the audit team selected was agreed upon by both parties. As I have noted, it was headed by the Chief of Airworthiness. Each audit, in turn, confirmed the validity of the previous audits. There was no evidence submitted before me which disclosed any frailty in the qualifications of the various audit teams or in the findings or recommendations arrived at by them.

Rather than taking immediate action to remedy the deficiencies noted and to implement the recommendations designed to ensure aviation safety in the future, the response of the Air Administration to each audit was the initiation of another audit. This is in keeping with what I view to be the policy enunciated by the Administrator when, as I have already observed, he stated:

"If an audit report doesn't contain sufficient evidence to satisfy Management that, in fact, the conclusions drawn by the auditors are correct in light of the facts that have been disclosed, then Management, we believe, whether it is an air carrier or in-house, has to be given the opportunity to conduct its own fact-finding process and, very often, this is done in more depth and with more sensitivity and understanding, but using the basic finding of the auditors."

I find it disturbing that there appears to be a policy that in response to a report critical of the manner in which the departmental fleet is being maintained and operated, even though the report was prepared by those selected by management, "Management . . . has to be given the opportunity to conduct its own fact-finding process. . . ." The result is

that a report critical of management is rejected and the corrective action recommended not implemented with the view that management's own fact-finding process carried out "with more sensitivity and understanding" would diffuse the critical findings in the report. Such a fact-finding process lacks any appearance of independence and objectivity.

The 1981 audit appears to have been the most extensive of all and revealed that the state of departmental aircraft and the operation of the fleet were deteriorating. It disclosed not only previously detected deficiencies still in place but many more. In the 1981 report the audit team listed such serious deficiencies as inadequate training programs for all flight operation personnel and dispatchers; unqualified flight crew members; transportation flights carried out by pilots with elapsed instrument rating, without pilot proficiency checks, and by pilots not qualified on the airplane type; fuel loading hazards; overloading; inadequate flight planning and flight watch; and lack of inspections, amongst many others. If such deficiencies were discovered in an audit of a commercial air carrier, it is apparent that the right of the carrier to continue to hold an operating certificate would seriously be called into question.

When one has regard to the fact that the Air Administration is tasked with the policing of commercial carriers, one would expect that the maintenance and operation of its own fleet would be exemplary and a model for other carriers to follow.

As I have noted, the 1981 audit team concluded that "the deficiencies identified had the potential to adversely affect safety", but they added "there was no indication that they had done so to date". This addendum disclosed, in my respectful opinion, an unwarranted complacency and could discourage any immediate action being taken.

In light of the deficiencies noted with respect to the airworthiness, maintenance and operation of departmental aircraft and of the number of aircraft accidents within the Air Administration, there can be no basis for any feeling of complacency.

I have already noted the number of accidents involving departmental aircraft. The audit of 1979 was a direct result of the fatal accident of a Transport Canada Beechcraft in May, of 1979, in which two transport employees were killed. This accident was thoroughly reviewed in Volume 1.

As I also noted, another fatal accident occurred on February 28, 1981. The purpose of this flight was a proficiency check and an instrument renewal for the Captain. The two crew members died as a result of the accident while a third pilot, an observer, suffered serious injuries.

In the Aircraft Accident Report following the investigation into this accident, the aircraft accident investigators made the following findings:

"After the right fuel lever was selected to the OFF position to simulate an engine failure, the fuel lever for the left engine was inadvertently moved to the OFF position.

The altitude selected for the exercise was not consistent with good safety practices and was contrary to the minimum altitude stipulated in the Inspection Instructions.

There was a lack of crew discipline and co-ordination during the shutdown procedure for engine failure.

After the second engine was failed, the crew had neither the time nor the height to regain adequate power to go around.

There were no minimum altitude limitations published in the Flight Operations Manual to adequately cover simulated engine shutdown in flight.

All the airframe fractures examined were typical of overload failures due impact. No evidence was found of any inflight failure or fire preceding impact.
(Emphasis added.)

It is to be noted that the very aviation safety deficiencies which appeared to have been the contributing causes of this fatal accident were amongst those detected in the 1981 audit.

It is apparent from what has preceded that the state of departmental aircraft, both with respect to the maintenance of the aircraft and the operation of the fleet, is unsatisfactory. It is not a lack of manpower which has brought about this unsatisfactory state of departmental aircraft, but the failure to meet the safety standards which all those in the aviation community are expected to observe.

Immediate remedial action must be taken in response to the series of audits which have been set forth above. However, in light of the history of the failure to take action in the past, one cannot have any confidence that the steps so urgently needed to correct the deficiencies will be taken. The situation is serious enough to call for the direct intervention of the Minister of Transport. In order to assist him, the Minister might appropriately, in my opinion, seek the assistance of outside consultants. It would be the mandate of the consultants to monitor the implementation of the changes that are necessary with a view to seeing that the departmental aircraft are maintained and operated in compliance with the relevant safety standards and in a manner to set an example for all commercial air carriers.

PART II

RECOMMENDATIONS

1. Immediate action should be undertaken to remedy the aviation safety deficiencies disclosed in the 1975, 1978, 1979 and 1981 audits of departmental aircraft.
2. The Minister of Transport should retain outside consultants to monitor the implementation of the changes that are necessary with a view to seeing that the departmental aircraft are maintained and operated in a manner consistent with the relevant safety standards and in a manner to set an example for all commercial air carriers.
3. The consultants should report to the Minister of Transport as to the progress being made to correct the aviation safety deficiencies disclosed in the respective audits and should advise the Minister whether the necessary improvements are being made with due dispatch.

SUMMARY OF RECOMMENDATIONS IN VOLUME 2

Recommendations numbered 1 to 63 can be found in Volume 1, and the recommendations in Volume 2 have been re-numbered in the summary as follows:

ENFORCEMENT RECOMMENDATIONS

ENFORCEMENT REORGANIZATION

(1) Headquarters

64. The creation of a separate Enforcement Branch of the Air Administration headed by a Director of Enforcement.
65. The authority of the Minister to take enforcement action should be delegated to the Director of Enforcement.
66. The function of the Enforcement Branch and of the Director of Enforcement should be the enforcement of the Aeronautics Act, the Air Regulations and subordinate legislation which has the force of law.
67. The objective of the Enforcement Branch should be to obtain compliance with the aviation safety standards lawfully promulgated.
68. The Director of Enforcement should develop a coherent enforcement policy to be published in an enforcement manual provided to all enforcement specialists and should seek to achieve uniformity in all the regions.
69. The enforcement policy should recognize the respective roles of detection, conciliation and imposition of administrative and judicial penalties in obtaining compliance as hereinafter set forth.
70. The enforcement policy should recognize aviation safety as the paramount consideration in determining when and what enforcement action should be taken with due regard to public convenience and economic consequences.

- 71. The enforcement policy should require that vigorous enforcement action will be taken with respect to all deliberate breaches of the aviation safety standards which derogate from safety.
- 72. The enforcement policy should set forth that concern about potential political consequences should not be taken into consideration in the determination of enforcement action.
- 73. The enforcement policy should recognize that the laws will be fairly and equally enforced and that all persons and corporations are equal in the eyes of the law.
- 74. The CATA/Air Canada Liaison Committee should cease to play a role in pending enforcement proceedings against Air Canada.

(2) Regions

- 75. The creation of an Enforcement Branch in every region and headed by a Regional Director of Enforcement.
- 76. The Regional Director of Enforcement should have the delegated authority to take enforcement action in all matters relating to general aviation and local air carriers.
- 77. The regional enforcement specialists should be located in an area close to the aviation community, and there should be sub-regional offices in each of the regions to provide a greater presence of the enforcement specialists in the aviation community.

(3) Manpower

- 78. There should be the addition of sufficient enforcement specialists to provide each region with not less than three such specialists.

79. An effort should be made to assign one enforcement specialist with special expertise to each of the fields of general aviation, air carriers and maintenance in each of the regions.
80. All civil aviation inspectors and airworthiness inspectors should be utilized in the enforcement process when infractions are detected by them and in a manner useful to the enforcement specialists.
81. All enforcement specialists, civil aviation inspectors and airworthiness inspectors should receive special training in enforcement procedures.
82. The Department of Justice should make available a lawyer in each region who would assist the enforcement organization on a full-time basis .

ADMINISTRATIVE PENALTIES

83. The enabling legislation should provide for the imposition of the following administrative penalties:
 - (a) The cancellation or suspension of any licence, certificate or document of entitlement issued by or under the authority of the Minister;
 - (b) The levying of a fine by administrative action to be exercised by the Director of Enforcement.
84. The enabling statute should authorize that, in cases of urgency, a temporary cancellation or suspension of a licence, certificate or document of entitlement could be made without notice.
85. Except in cases of urgency, no administrative penalty should be imposed unless preceded by a written notice specifying the breach complained of and a reasonable opportunity has been afforded for a response in writing.

A CIVIL AVIATION APPEAL TRIBUNAL

86. The creation of a Civil Aviation Appeal Tribunal to hear and review all appeals with respect to any administrative enforcement action taken by the Director of Enforcement or the Regional Director.
87. The members of the Civil Aviation Appeal Tribunal should be appointed by the Governor-in-Council and be responsible to the Minister of Transport.
88. The Civil Aviation Appeal Tribunal should be a quasi-judicial body governed by the rules of natural justice.
89. The proceedings before the Civil Aviation Appeal Tribunal should be by way of a hearing de novo.
90. Any suspension of a licence, certificate or document of entitlement should remain in effect pending review by the Civil Aviation Appeal Tribunal.
91. Any administrative fine, subject to appeal, should not be payable pending disposition by the Civil Aviation Appeal Tribunal.
92. The Civil Aviation Appeal Tribunal, in the disposition of an appeal, should have the authority to make such order as it deems appropriate.

JUDICIAL PENALTIES

93. Penalties for the breach of the laws governing aviation safety should be substantially increased, and the more serious offences should be punishable by either summary conviction or by indictment at the option of the Crown.
94. In those cases where it is determined to proceed by way of prosecution, prosecutions should not be preceded by a show-cause letter of allegation.

COOPERATION WITH THE RCMP

95. The Director of Enforcement and the Commissioner of the RCMP should confer with a view to reaching agreement for cooperation in the prosecution of offences under the Aeronautics Act and the subordinate legislation, and for the training of enforcement specialists, civil aviation inspectors and airworthiness inspectors.

UNLICENSED CHARTERERS

96. The enforcement agencies of the Air Administration and of the Canadian Transport Commission should coordinate in proceedings against those persons or corporations who carry passengers for hire without a carrier's licence issued by the Canadian Transport Commission and an operating certificate issued by Transport Canada.
97. The enabling legislation should authorize any court, which convicts an offender for carrying passengers for hire without the appropriate licences, to order forfeiture of the aircraft.
98. Any person or corporation who has been convicted of carrying passengers for hire without the appropriate licences should be prohibited from obtaining a carrier's licence from the Canadian Transport Commission or an operating certificate from Transport Canada for a minimum period of one year.

AUDIT PROCEDURES

99. A program for the unannounced audit of air carriers should be instituted where there is reason to believe that an operation is being carried on which endangers aviation safety.

REINSTATEMENT OF OPERATING CERTIFICATES

100. No reinstatement of an operating certificate following suspension should be granted without a careful inquiry by the enforcement agency to satisfy itself that the matters which brought about the suspension had been corrected, and there is reasonable grounds to believe that the operator will in future comply with the safety standards.

LEGISLATION

101. The Aeronautics Act, the Air Regulations and subordinate legislation should be redrafted, simplified and consolidated.
102. The enabling statute should specifically authorize the Minister to delegate his enforcement authority to appropriate officials and to specify those who may in turn sub-delegate such authority.

WEATHER MINIMA

103. The standards as regards weather minima in precision and non-precision instrument approaches should be revised and up-dated as suggested in the 1978 Departmental study entitled "Investigative Analysis of Instrument Approach and Takeoff Minima, Phase I".
104. In redrafting the legislation, an objective standard with respect to weather limits should be observed.
105. The look-see practice as it applies to weather minima should be restricted for all precision and non-precision instrument approaches, other than in cases of emergency.
106. With the adoption of enforceable weather minima, a sustained effort should be undertaken to enforce these minima.
107. Any authorizations to certain carriers and corporate owners to conduct operations to weather limits other than as prescribed by regulation should be discontinued.
108. Wherever possible, precision instruments for objective weather reporting, such as transmissometers, should be installed at airports where the traffic warrants.

PROPOSED RULE CHANGES

109. A procedure should be instituted for advance notice of proposed rule changes affording those affected an opportunity to be heard before the change is implemented.

AIRWORTHINESS RECOMMENDATIONS

A CANADIAN AIRWORTHINESS CODE

- 110. The Aeronautics Act, the Air Regulations and subordinate legislation relating to airworthiness should be redrafted to provide a comprehensive Airworthiness Code.
- 111. The revision of the legislation referred to should be carried out by the Aeronautics Task Force in consultation with the aviation community.
- 112. The Federal Aviation Airworthiness Regulations and the Federal Aviation Operational Regulations of the United States should be used and adapted as the model for a Canadian Airworthiness Code, supplemented by such special conditions based on our own experience and required for Canadian aviation purposes.
- 113. Airworthiness standards should be related to the use proposed for the aircraft rather than by its weight.
- 114. For the purposes of determining the appropriate airworthiness standards, corporate aircraft should be equated with aircraft used for commercial air carrier purposes.
- 115. Commercial air carriers currently using aircraft of a gross take-off weight of under 12,500 pounds should be given a reasonable period of time to comply with the upgrading requirements of the proposed Federal Aviation Airworthiness and Operational Regulations to permit them to do so without undue financial hardship.

DESIGN APPROVAL FOR U.S. AND OTHER FOREIGN AIRCRAFT

- 116. With respect to aircraft manufactured in the United States of America, Canada should respect the Bilateral Agreement and accept the Certificate of Airworthiness for export of the competent American authority subject to compliance with any special conditions required to be met by United States' manufacturers as specified in the Canadian Airworthiness Code as provided for in Recommendation No. 3.

117. The current practice of the validation of transport category aircraft manufactured in the United States for export to Canada should be discontinued and replaced by a program for the familiarization of the aircraft by the Canadian airworthiness authority; and the determination that any special Canadian airworthiness conditions have been complied with.
118. Consideration should be given to the entering into of agreements similar to the Bilateral Agreement between Canada and the United States with other foreign countries having a history of providing responsible aircraft type approval and certification.

DOMESTIC TYPE APPROVAL AND CERTIFICATION

119. Tests essential for the determination of the airworthiness of the aircraft should be monitored by the Airworthiness Branch or its delegates.
120. Records should be made of such tests.
121. The records of such tests should be preserved as long as the aircraft's continuing airworthiness is under the surveillance of the Airworthiness Branch.

CONTINUING AIRWORTHINESS

122. The Airworthiness Branch should be reorganized to provide for a continuing Airworthiness Division with a view to placing greater emphasis on continuing airworthiness. Employees within the Air Administration should be assigned to the continuing Airworthiness Division with particular responsibility for that task.
123. The continuing Airworthiness Division should be responsible for the careful compilation, monitoring and analysis of Service Bulletins and Airworthiness Directives.
124. A training program should be introduced to enable personnel working within the continuing Airworthiness Division to be better qualified to interpret Airworthiness Directives affecting aircraft being operated in Canada.

125. Manufacturers of aircraft should be obliged to forward to the continuing Airworthiness Division all Service Bulletins relating to all aircraft operating in Canada.
126. The Airworthiness Code should require that operators and others, having knowledge of any matter or incident that may affect the airworthiness of the aircraft discovered during flight, ground operations or maintenance, report the same to the continuing Airworthiness Division.
127. The continuing Airworthiness Division should inquire into every matter or incident where the airworthiness of an aircraft is brought into question and should satisfy itself that all corrective measures have been taken to assure the continuing airworthiness of the aircraft.
128. The continuing Airworthiness Division should immediately review and re-evaluate the Aviation Safety Deficiency Notifications received by it to date, and should report to the Administrator on the action to be taken, or provide the reason for not taking action in response to such notifications.

DELEGATION OF AUTHORITY

129. The Design Approval Representative and the Airworthiness Inspection Representative systems should be continued subject to the changes hereinafter recommended.
130. The Approved Company systems should be continued subject to the changes hereinafter recommended.
131. The Design Approval Representatives and the Airworthiness Inspection Representatives should be licensed or accredited by Transport Canada.
132. The role and responsibilities of the Design Approval Representatives and the Airworthiness Inspection Representatives should be codified in the Airworthiness Code.

133. The Airworthiness Code should provide that no Design Approval Representative or Airworthiness Inspection Representative should be dismissed by an employer without the approval of Transport Canada, but which approval should not be withheld unless the dismissal was by way of reprisal because of the representative having carried out his obligation to Transport Canada.
134. The Airworthiness Code should provide that an Approved Company should not depart from the Maintenance and Overhaul Manual without prior reasonable notice to the Airworthiness Branch.

AIRWORTHINESS INSPECTORS

135. Airworthiness inspectors should be provided with additional clerical assistance which would permit them to spend greater time in the field and to maintain a greater presence in the aviation community.

DEPARTMENTAL AIRCRAFT RECOMMENDATIONS

136. Immediate action should be undertaken to remedy the aviation safety deficiencies disclosed in the 1975, 1978, 1979 and 1981 audits of departmental aircraft.
137. The Minister of Transport should retain outside consultants to monitor the implementation of the changes that are necessary with a view to seeing that the departmental aircraft are maintained and operated in a manner consistent with the relevant safety standards and in a manner to set an example for all commercial air carriers.
138. The consultants should report to the Minister of Transport as to the progress being made to correct the aviation safety deficiencies disclosed in the respective audits and should advise the Minister whether the necessary improvements are being made with due dispatch.

SCHEDULE "A"

WITNESSES

George Allen

Self-employed Aircraft Maintenance Engineer, Sioux Lookout

William Apps

Regional Vice-President for the Mountain Region of the Canadian Brotherhood of Railway, Transport and General Workers

Pierre E. Arpin

Director General, Civil Aeronautics, Transport Canada, Ottawa

Bruce Aubin

General Manager of Engineering, Air Canada. Chairman of the Engineering and Maintenance Committee of the Air Transport Association of Canada

G. Robert Ayres

Co-owner, Superior Airways Ltd.

Albert A. Bach

Regional Air Administrator, Pacific Region, Transport Canada

Melhi R. Bandravala

Regional Superintendent of Air Carrier Operations, Pacific Region, Transport Canada

B. Barfoot

Float and Ski Plane Operator, Big Trout Lake Air Service

John Barkman

On behalf of the Sachigo Lake Band

Thomas J. Barnes

Civil Aviation Inspector, Enforcement Section, Pacific Region, Transport Canada

Francis W. Bayne

Coordinator of the Flight Management Program and the Operations Manager for Confederation College, Thunder Bay

Robert N. Baynes

Chief Superintendent, Royal Canadian Mounted Police, Operational Policy, Planning & Evaluation for "E" Division, British Columbia

Tommy Beardy

On behalf of the Muskrat Dam Band

Roger Beebe
Manufacturing Senior Inspector, Aeronautical Engineering & Aircraft Inspection,
Transport Canada, Toronto

Elijah Begg
On behalf of the Kingfisher Lake Band

R. P. Bentham
Superintendent of Test Flying, Transport Canada, Ottawa

D. T. Berg
Regional Airworthiness Inspector, Aeronautical Engineering & Aircraft Inspection,
Transport Canada, Toronto

Brick K. Betsworth
Pilot, Island Airlines Ltd., Campbell River, B.C.

Robert L. Biggar
Representative, International Association of Machinists and Aerospace Workers

James Biggs
Chief Pilot, Bearskin Lake Air Services Limited

Chief John Bighead
On behalf of the Wannumin Lake Band

Kenneth Bittle
Base Engineer, Austin Airways Ltd.

Richard G. Bond
Taku Air Transport, Atlin, B.C.

Thomas Brenan
Self-employed Flight Instructor, Victoria, B.C.

Chief Simon Brown
On behalf of the Angling Lake Band

Charles F. Burbank
Canadian Executive Secretary, International Flying Farmers

Donald L. Button
Director, Aviation Safety Bureau, Transport Canada, Ottawa

John E. Bygate
Coordinator, Avionics Maintenance Technician Program, Aviation & Motive Power
Department, Confederation College, Thunder Bay

Ned C. Carnie
Supervisor of Aircraft Licences, Air Regulations Division, Transport Canada,
Thunder Bay

Howard Carter
Enforcement Officer, Atlantic Region, Transport Canada

Laurent Chartier
Regional Controller of Civil Aviation, Quebec Region, Transport Canada

John R. Chyk
President, Slate Falls Airways Ltd.

Dr. Shirley A. Conover
Biologist; Vice President, MacLaren Marex Inc., St. John's, Newfoundland

Joseph C. Crisante
Mechanical Foreman, Ministry of Transportation and Communications, Thunder Bay

Grand Chief Dennis Cromarty
On behalf of the Grand Council Treaty #9

Dennis Crow
On behalf of the Fort Severn Band Council

J. Wilfrid Cusson
Regional Superintendent of the Division Inspection and Certification of Air Carriers
Division, Quebec Region, Transport Canada

Ronald Davie
General Manager, Lambair Limited, Winnipeg

J. A. Pierre de Niverville
Chief of Aviation Safety Analysis, Aviation Safety Bureau, Transport Canada, Ottawa

Harold L. Deyarmond
Regional Controller, Civil Aviation, Atlantic Region, Transport Canada

Serge Dorion
Air Traffic Controller, Quebec Airport, Transport Canada

Jack Duncanson
Hinterland Lodge & Astopholin

Barbara M. Dunn
National Safety Chairperson, Canadian Air Line Flight Attendants' Association,
Vancouver

Aldo E. Favot
Councillor, On behalf of the Corporation of the Town of Sioux Lookout

Charles Fiddler
On behalf of the Pehtabun Area Chiefs

John Fiddler
Councillor for the Sandy Lake Band Council

Moses Fiddler
On behalf of the Muskrat Dam Band Council

Chief Saul Fiddler
On behalf of the Sandy Lake Band Council

Tom Fiddler
Elder, Sandy Lake Band Council

Albert W. Forth
Pilot, West Coast Air Services Ltd., Richmond B.C.

Albert Fortier
President, Airgava Ltee.

Charles Fox
On behalf of the Muskrat Dam Band Council and the Windego Tribal Council

George Fraser
Flight Service Specialist, Sioux Lookout Airport, Transport Canada

Harvey Friesen
President & Operations Manager, Bearskin Lake Air Services Limited

Henry Frogg
On behalf of the Community of Long Dog Lake

Simon Frogg
On behalf of the Angling Lake Band and the Community of Long Dog Lake

Floyd R. Glass
Co-owner, Athabaska Airways Ltd.

Dr. Wilfred G. Goldthorpe
Medical Practitioner, Sioux Lookout Zone Hospital

Seth W. Grossmith
Engineering Test Pilot, Transport Canada, Ottawa

Terrence B. Halverson
Pilot, Northern Thunderbird Air Ltd., Prince George, B.C.

Terrence W. Heaslip
Chief, Aviation Safety Engineering, Aviation Safety Bureau, Transport Canada,
Ottawa

Gordon Hill
Pilot, Central Air Transport; Former Flying Instructor at Sioux Lookout Flying Club

Gerald E. Holmstrom
Air Traffic Controller, Transport Canada, Kenora

Donald Hood
Audiologist, Thunder Bay

J. W. Hostetler
President, Red Lake Flying Club Inc., Cochenour

G. Barry Houston
Aircraft Maintenance Engineer, Ministry of Natural Resources; Former Chief
Engineer, Slate Falls Airways

Sally Irwin
Registered Nurse, Sioux Lookout Zone Hospital

Edward D. Jensen
Chairman, Air Safety Committee, Aircraft Operations Group, Canadian Union of
Professional and Technical Employees

Daniel Johnson
President, Kelowna Fun Seekers

Donald Joseph
Structural Engineering Specialist, Airworthiness, Transport Canada, Ottawa

Chief David Kamenawatamin
On behalf of the Bearskin Lake Band

Stuart Keate
Retired newspaper publisher

Zeb Kenequanasi
On behalf of the North Caribou Lake Band

Russell P. Killaire
Senior Aviation Planner, Ministry of Transportation and Communications

Robert E. Klein
Chief Airworthiness Engineer, The de Havilland Aircraft of Canada, Limited

Edward Koostachim
On behalf of the Fort Severn Band Council

Robert S. Lafleur
Director, Aeronautical Standards and Legislation; Director, Aeronautics Act Task Force Legislative Review; Transport Canada, Ottawa

Sergeant John Lamb
Detachment Commander, Royal Canadian Mounted Police, Kenora Branch

Donald E. Lamont
Director, Aeronautical Licensing & Inspection Branch, Transport Canada, Ottawa

Jill Linklater
Nurse, Sandy Lake Reserve

Jim M. Livingston
On behalf of the Canadian Air Traffic Control Association, Inc.

Ralph F. Lord
Regional Superintendent of Air Regulations, Atlantic Region, Transport Canada

Lesley Louttit
On behalf of the Grand Council Treaty #9

Corporal Donald S. Mackenzie
Royal Canadian Mounted Police, General Investigation Section, Thunder Bay

Captain C. Robert MacWilliam
Consultant to the Commission of Inquiry on Aviation Safety

Robert Mason
Airworthiness Inspector, Transport Canada, Toronto

Donald Matheson
Line and Chief Pilot, Haida/Island Airlines, Campbell River, B.C.

Roy Mathieson
Assistant Chief Engineer, Athabaska Airways Ltd., Prince Albert, Saskatchewan

George McKay
Councillor, Big Trout Lake Band

Gerald McKay
Councillor, Big Trout Lake Band

Chief Jeremiah McKay
On behalf of the Kasabonika Lake Band

Walter M. McLeish
Administrator, Canadian Air Transportation Administration, Transport Canada,
Ottawa

W. John McNulty
Civil Aviation Inspector, Air Regulations Division, Western Region, Transport Canada

Morley Meekis
Sandy Lake Reserve

John S. Melvin
Regional Manager, Air Traffic Services, Pacific Region, Transport Canada

Captain Pierre Menard
Consultant to the Commission of Inquiry on Aviation Safety

Donald W. Michaud
Former Flight Instructor, Kelowna Fun Seekers

Russell G. Minaker
General Manager, West Coast Air Services Ltd., Richmond, B.C.

Carl P. Moran
Superintendent of Air Regulations, Pacific Region, Transport Canada

Rudy Morris
On behalf of the Kasabonika Lake Band

Marshal W. Ney
Chief of Maintenance, Air Division, Royal Canadian Mounted Police, Victoria, B.C.

John E. O'Brien
Manager, Engineering & Operations, Engineering & Air Safety Department of the U.S.
Air Line Pilots Association

Kenneth D.J. Owen
Chief of Airworthiness, Transport Canada, Ottawa

Paul H. Patten
Director of Design Assurance, McDonnell Douglas Canada Ltd.

Andre Paulin
Superintendent, Air Safety Investigations Division, Quebec Region, Transport Canada

Shirley L. M. Poole
National President, Canadian Air Line Flight Attendants' Association

Desmond A. Price
Aviation Safety Officer, Pacific Region, Transport Canada,

Norman Quill
Councillor, Pikangikum Band

Chief Abel Rae
On behalf of the Deer Lake Band Council

Chief Stanley Rae
On behalf of the North Spirit Lake

William T. Ramage
Director of Maintenance Quality, Air Canada Base

William Ranney
Manager of Remote Northern Transportation, Ministry of Transportation and Communications

Douglas Richard
Lawyer, Department of Justice, Halifax

John A. Richard
Owner, Eastern Flying Service Ltd. Sydney, N.S.

Donald A. Richardson
Supervisor, Flight Training Standards, Pacific Region, Transport Canada

Pierre Rivest
Director of Air Transport Directorate, Quebec Ministry of Transport

William J. Robertson
President, Canadian Air Traffic Control Association, Inc.

Harry E. Ross
Senior Inspector - Avionics, Aeronautical Engineering & Aircraft Inspection, Transport Canada, Toronto

Chief Simon Sakakeep
On behalf of the Kingfisher Lake Band

David L. Salmon
Controller, J.R.T. Logging Group

Cecil R. Sampert
Enforcement Officer, Air Transport Committee, Vancouver

Barry A. Saunders
Air Traffic Controller, Transport Canada, Kenora

Louis F. Shainline
Senior Inspector - General Aviation, Aeronautical Engineering & Aircraft Inspection,
Transport Canada, Toronto

Thomas E. Siddon
Member of Parliament for Richmond/South Delta, British Columbia

Roderick W. Slaughter
Regional Superintendent of Air Regulations, Central Region, Transport Canada,
Winnipeg

David C. Slayter
Civil Aviation Inspector and Calibration Pilot, Airways Division, Air Space Section,
Transport Canada, Moncton, N.B. Member of the Aircraft Operations Group,
Canadian Union of Professional and Technical Employees

Darrel G. Smith
General Manager, Airwest Airlines, Ltd. Former Regional Controller of Civil
Aviation, Pacific Region, Transport Canada

Vern R. Speiran
Supervisor of Licensing and Instrument Standards, Atlantic Region, Transport Canada

Alexander J. Spencer
Quality Assurance Manager, Innotech Aviation Limited

Gerald C. Sterns
San Francisco Attorney

Chief Alex Strang
On behalf of the Poplar Hill

Chief John J. Suggashie
On behalf of the Pikangikum Band

L. Eric L. Tall
On behalf of Atlantair Ltd., Moncton, N.B.

Lorne A. Tapp
Acting Chief, Aviation Safety Investigation, Aviation Safety Bureau, Transport
Canada, Ottawa

Russell J. Thatcher
Consultant to the Commission of Inquiry on Aviation Safety

Craig Thompson
Official of Park Air Ltd. Kelowna, B.C.

John Thompson
Director of Product Engineering, The de Havilland Aircraft of Canada, Limited

Michael Thompson
Pilot, Gulf-Air Aviation Ltd., Campbell River, B.C.

Steven Vodi
Business Representative, Local 2413, International Association of Machinists and
Aerospace Workers

Jean D. Wagner
Regional Superintendent of Air Regulations, Quebec Region, Transport Canada

Keith Walker
Senior Airworthiness Engineer, Airworthiness Division, Aeronautical Licensing and
Inspection, Transport Canada, Ottawa

Karl Weinstein
On behalf of the Canadian Owners and Pilots Association

Stanley G. Wereschuk
Pilot, Airwest Airlines, Ltd. Holder of Airline Transport Pilot's Licence and Aircraft
Maintenance Engineer

L. Wildhaber
Regional Superintendent of Aeronautic Technology, Quebec Region, Transport
Canada

James Wilson
Former Executive Assistant to the President of Airwest Airlines, Ltd.

Roderick Winnepentonga
Councillor, Wannumin Lake Band

Ross K. Woodward
Pilot, Austin Airways Ltd.

B. J. Wormworth
Engineering Test Pilot, Transport Canada, Ottawa

COMMISSION COUNSEL

John Sopinka, Q.C.
Counsel

Gary Q. Ouellet
Associate Counsel

Ian F. Kelly
Assistant Counsel, Northern Ontario and Halifax Hearings

Stephen J. Mulhall
Assistant Counsel, Vancouver Hearings

Arthur E. Lorenz
Assistant Counsel, Airworthiness Hearings

Scott W. Fleming
Student-at-law

CONSULTANTS

Robert F. Carducci, (Phase I)
Professional Engineer, Northeast Engineering & Development Ltd.

Captain C. Robert MacWilliam, (Phase I and III)
Pilot, Air Canada

Captain Pierre Menard, (Phase III)
Pilot, Quebecair

Robin Nunn
Director of Research

Gerald F. Richardson, (Phase III)
Richardson Investigation Services Inc.

Russell J. Thatcher, (Phase I and III)
Airline Maintenance Consultant

COUNSEL and REPRESENTATIVES

George C. Capern

Vice President of Operations, Air Transport Association of Canada

Timothy Cappell

On behalf of McDonnell Douglas Canada Ltd.

W. R. Cottick

On behalf of the Air Law Section, British Columbia Branch, Canadian Bar Association

Andrew R. Davis

On behalf of Joe Cadham and Ram Air Enterprises

Charles Desrosiers

On behalf of Airgava Ltee.

Dan M. Fiorita

On behalf of the Department of Transport

Andre M. Garneau, Q.C.

On behalf of the Department of Transport

D. Bruce Garrow

On behalf of The de Havilland Aircraft of Canada, Limited

Thomas O. Griffiths

On behalf of the Air Law Section, British Columbia Branch, Canadian Bar Association
(Vancouver)

Lynn Kaye

On behalf of the Aircraft Operations Group, Canadian Union of Professional and
Technical Employees

John T. Keenan

On behalf of the Canadian Air Line Pilots Association (Toronto)

Eric M. Lane

On behalf of The de Havilland Aircraft of Canada, Limited

Dr. William James McArthur

Chief Coroner, Province of British Columbia

Captain Don J. McBride

Pilot, Air Canada; Member of the Canadian Air Line Pilots Association

William M. McIntosh
On behalf of Athabaska Airways Ltd.

Peter D. Messner
On behalf of Richard G. Bond

Edwin T. Nobbs, Q. C.
On behalf of the Air Transport Association of Canada (Toronto)

Geoffrey N. Pratt
On behalf of Air Canada and the Air Transport Association of Canada

J. H. W. Sanderson
On behalf of Athabaska Airways Ltd.

John H. Sims
On behalf of the Department of Transport

Donald J. Soroohan
On behalf of Island Airlines Ltd.

LaMarr O. Stanford
On behalf of the Aircraft Operations Group, Canadian Union of Professional and Technical Employees

Michelle Swenarchuk
On behalf of the Aircraft Operations Group, Canadian Union of Professional and Technical Employees

W. M. Swystun, Q.C.
On behalf of the Canadian Association of Primary Air Carriers and also the Air Law Section, British Columbia Branch, Canadian Bar Association

Bram Tilroe
Vice President, Canadian Air Traffic Control Association, Inc.

Richard Yorke
On behalf of the Transport Aerien du Quebec

Norman K. Zlotkin
On behalf of the Grand Council Treaty #9

